First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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REO ADDS FLYING CLOUD 6 AND 8

Vane Says Ohio Title Law Will Expose Bootlegging And Reduce Car Thefts

Titles Under This Measure Will Start With Manufacturer Rather Than With Dealer As in Past

New York, May 21.—"Among the important legislative developments of the present year is the announcement that the state of Ohio has enacted a Certificate of Title law and this law has been signed by the governor," says C. A. Vane, general manager of the National Automobile Dealers Association in the current bulletin of that organization.

"One major departure has been made in the Ohio law which will be watched with interest. It is a provision requiring that title start with the manufacturer of the car, not with the dealer who first sells it for registration.

"This provision will effectively indicate to a dealer group representing any line of cars whether the manufacturer (at least in Ohio) is selling his product through dealers or through bootleggers or trying to sell through both channels. In 1929, when bootlegging reached its maximum development, denial was universally made by all manufacturers that they had any knowledge of bootlegging in their own products.

"Dealers and bootleggers cannot

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CANADA MAY REVISE PRESENT TARIFF LAW AFFECTING U. S. CARS

MONTREAL, Quebec, May 21.—It is understood that changes are impending with regard to imposition of duties on cars coming into Canada. Under the recently inaugurated regulations whereby the discount allowed on imported cars for duty purposes was reduced, the United States manufacturers

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CINCINNATI TRUCK OWNERS UNITE TO FIGHT TAX BOOST

Cincinnati, May 21.—Cincinnati truck owners and operators, at an indignation meeting, went on record in opposition to the proposed increase in taxation on commercial cars in Ohio, bills now before the Legislature contemplating increase of from 72 to 95 per cent. above the present rates on trucks.

Representatives of a majority of the leading industries in the city attended the meeting and a fund of considerable proportions was raised to aid in the effort to combat the proposed legislation, now before the tax committee of the state Legislature. Representatives attending the meeting decided to unite with the Cincinnai Truck Taxation Committee, with headquarters at the Cincinnati Automobile Club.

Former Senator J. F. Atwood of Columbus, told those present that more than 78 per cent. of the House of Representatives is from rural localities, which will not be affected by the proposed taxation and he declared it was up to the industries and businesses in the cities to wage the fight on the bill.

The measure provides that funds

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CHEVROLET REPORTS NO LET-UP IN SALES; MAY OUTPUT 110,000

Detroit, May 21.—H. J. Klingler, vice-president and general sales manager of Chevrolet Motor Company, stated to dealers there is no indication yet of a downturn in Chevrolet sales. "We expect to sell as many cars in May as we did in April when domestic sales totaled approximately 100,000. We expect May production will total at least 110,000 cars and trucks," he said.

Mr. Klingler stated that Chevrolet expected to reach its objective of 1,000,000 cars this year. Assuming an output of 110,000 units in May, Chevrolet will have produced a total of 433,783 cars and trucks in the first five months of 1931, leaving 566,217 units to be produced in the next seven months of 1931, to reach the 1,000,000-car objective. This would indicate an average monthly output for the balance of the year of around 81,000 units.

Chevrolet plans no change in prices or models during the current year, but will continue with the present line, said Mr. Klingler.

The company will not lay off any

(Continued on Page 5)

MARMON REPORTS GAIN IN DEMAND FOR NEW SIXTEEN

INDIANAPOLIS, Ind., May 21.—Officials of the Marmon Motor Car Company report that orders for new Marmon sixteen, for immediate shipment, together with shipments already made, have retail value of more than $750,000.

Demand from both dealers and retail buyers is reported to be exceeding expectations, with first cars enthusiastically received throughout the country.

Production of the Marmon sixteen started late last month, and is just now getting well under way. Dealers report difficulty of keeping cars on hand for display on account of demands for delivery by customers.

BODIES RESEMBLE ROYALE LINE, WITH PRICES UNDER PREVIOUS FLYING CLOUDS

Initial Production Is Limited to Sedans, With Other Bodies to Be Added in Near Future

LANSING, MICH., May 21.—Two new models, a Flying Cloud Six, known as the 6-21, and a companion car of eight cylinders, the 8-21, mounted on a 121-inch wheelbase chassis, are announced by the Reo Motor Car Company. The new six is priced at $1,295, the lowest price at which the Flying Cloud has been offered. The eight-cylinder model is priced $100 higher. In appearance is the suggestion of the Reo Royale models with the sharp Vee-radiator and fender design.

Except for the difference of engine design, the new models have the same mechanical specifications and the same bodies. A new engine is introduced in the eight-cylinder model which develops 90 b. h. p. at 3,300 r. p. m. The six-cylinder engine has the same dimensions as that previously used. Initial production is limited to sedan models, but it is understood that a coupe model with rumble seat will soon be produced.

The engine of the new eight-cylinder job has a bore and stroke of 3 and 4¾ inches respectively and a piston displacement of 268.6 cubic inches. The bore of the six-cylinder engine is 3⅜ inches, the stroke 5 inches, and the displacement 268.3 cubic inches. It develops 85 b. h. p. at 3,309 r. p. m.

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ENGINE BUILDERS REPORT INCREASE IN THEIR BUSINESS

Chicago, May 21.—Five hundred delegates of the Automotive Engine Rebuilders' Association, who are holding a four-day conference here at the Hotel Sherman, have taken stock of their business and report it good. They state that they find existing conditions have caused greater demand than ordinarily for their services.

R. G. Patterson of Indianapolis, president of the association, in his address of welcome, pointed to the

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Two New Hudson Directors Elected; Dividend Declared

DETROIT, May 21.—Several changes in executive personnel of the Hudson Motor Car Company were announced following the annual stockholders' meeting and election of officers and directors, at which a dividend of 25 cents per share, payable July 1 to stockholders of record at the close of business June 11 was declared.

C. G. Abbott, director of merchandising, was appointed a director, taking the place of J. W. Beaumont, whose resignation was regretfully accepted by the men with whom he has been associated for many years. He will devote his whole time to his personal business. Max F. Wollering, director of manufacturing, was also appointed a director, replacing J. H. Whittaker, who resigned as an officer last year.

All officers were re-elected. They are: R. D. Chaplin, chairman of the board; William J. McAneeny, president and general manager; A. E. Barit, first vice-president and treasurer, and E. W. Sheldrick, secretary. A. Hood was elected first assistant secretary.

The directors, in addition to Abbott & Wollering, are: S. G. Baits, A. E. Barit, R. D. Chapin, Howard E. Coffin, William J. McAneeny, E. W. Sheldrick, C. D. Sterling, R. H. Webber, and C. C. Winningham.

In his annual report to the stockholders Mr. McAneeny referred to the recent introduction of selective free wheeling, now offered as optional equipment on both Hudson and Essex. "This," he said, "had resulted in increased enthusiasm on the part of distributors, dealers and salesmen, and had met with immediate public acceptance.

"The economies of production, management and distribution effected during 1930 are already beginning to show results not only in savings to the company, but in savings to the consumer in the shape of increased quality at lower prices.

"Our entire organization is working more efficiently than ever before in the twenty-two-year suc-

(Continued on Page 10)

Late News Flashes

Detroit, May 21.—Employment index of the industrial department of the Detroit Board of Commerce on May 15 was 84, compared with 82.7 on April 15 and 111.5 on May 15, 1930.

The index, which covers two-thirds of the industrial employment in Detroit, is based on the monthly average for the years 1923-1925, inclusive, taken as 100.

* * *

Birmingham, May 21.—Dixie plant of the Goodyear Tire and Rubber Company at Gadsden is operating day and night and production has been increased to 6,500 tires daily.

* * *

New York, May 21.—At the annual meeting of stockholders of American Chain Company directors were re-elected.

TODAY

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Uses Sales-Mechanic to Sell Truck Service

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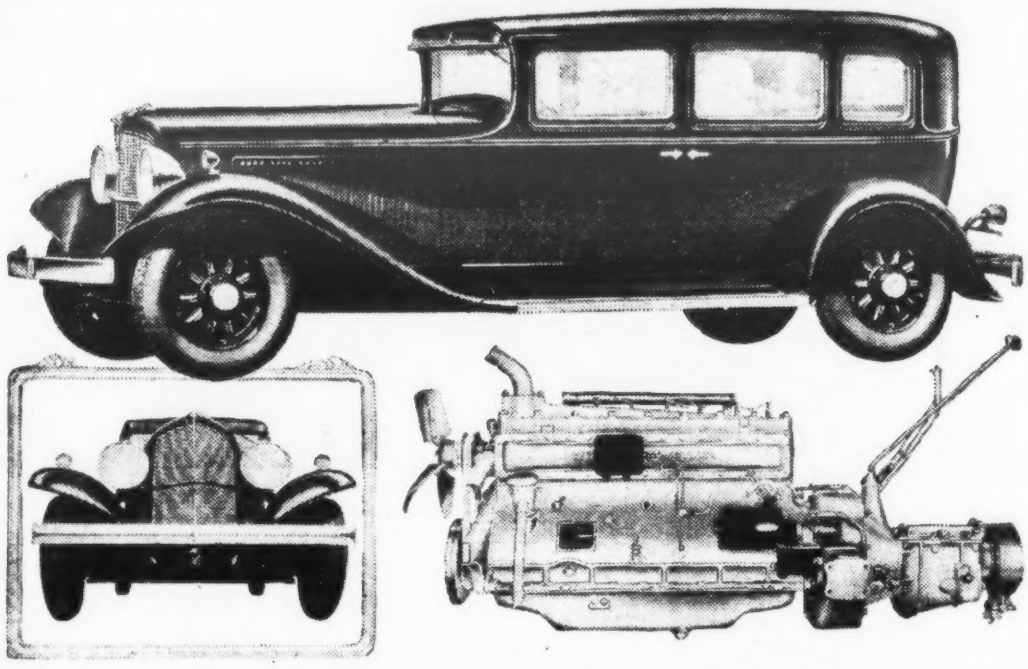
New Reo Eight-Twenty-One Flying Cloud



NEW REO 8-21 Flying Cloud sedan (upper). Lower left, front view showing new Vee-radiator and new fender treatment. Lower right, the new "8" engine

Reo Adds Flying Cloud Six and Eight at New Low Price for This Line

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Crankshafts of both engines are balanced and fitted with Lanchester vibration dampers. Other common features of the two engines include "Lo-Ex" aluminum alloy pistons with two compression and two oil rings, full pressure lubrication with cored or drilled oil passages leading up to all crankshafts and camshaft bearings. The crankshafts are drilled for pressure lubrication of the crankpin and connecting rod bearings.

Fuel is supplied by a positively driven diaphragm type pump. The cooling system consists of a cellular radiator with fan and water pump mounted at the front of the cylinder block. Electrical equipment includes a third brush regulated 6-8 v. generator, 6 v. battery and a starting motor with Bendix drive. Ignition is semi-automatic advance of the distributor and is provided with auxiliary control on the instrumental panel.

The same 10-inch single plate clutch used in previous Flying Clouds is continued in the new models as is the herringbone gear type 3-speed transmission with silent second, adopted by Reo.

The propeller shaft is of tubular type with metal universal joints. The semi-floating rear axle with spiral bevel gear and straddle mounted pinion has a ratio 4.42 on the eight, while the ratio for the six is unchanged, 4.07 to 1.

Fuly inclosed two-shoe internal expanding hydraulic brakes are used. The flanged drums are 14 inches in diameter and are used with full modeled facings 1¾ inches wide. A parking brake, of the contracting band is provided, which operates on the propeller shaft and is mounted at the rear of the transmission.

The front axle is of the reverse Elliott type. Tapered roller wheel and roller spindle thrust bearings are used.

The steering gear is of the cam and lever type, with ball thrust bearings above and below the cam and tapered roller thrust bearings between the steering spindles and the axle center forging.

The frame side rails are of sturdy construction, six inches deep with a constant flange width of two inches and securely braced by seven cross members.

Front springs are 37½x2; rear springs, 56⅛x2. Double acting hydraulic shock absorbers are fitted.

Equipment includes speedometer, oil pressure gauge, engine temperature indicator, ammeter and hydrostatic fuel gauge, all grouped with starter, spark, throttle, choke and lighting switch buttons and ignition lock on instrument panel. Rear view mirror, shade in rear window, assist cords, robe rail and dome light in sedans and finish interior hardware contribute to the comfort, convenience and attractiveness. Headlamps are of the tilting beam type. Parking lamps on the fenders, like the headlamps and other bright outside trim, are heavily chrome plated over nickel. Rear lamp and stop signal are combined. Artillery type wood wheels with spare rim mounted at the rear are standard equipment. Wire wheels, with spares mounted in fender wells, searchlights and numerous items of special equipment are available as extras at time of purchase through the new Reo custom department.

Classified Advertising

Classified Rates 5c Per Word

COMPETENT AMERICAN SALES AND SERVICE EXECUTIVE with twelve years' General Motors experience, nine years in foreign fields. Speaks Spanish and German fluently. Open for immediate connection. Write care of AUTOMOTIVE DAILY NEWS, Box 281, 350 Hudson St., New York City.

A.E.R.A. DELEGATES REPORT INCREASE IN THEIR BUSINESS

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trend from steam to internal combustion engines.

"With the everincreasing use of internal combustion engines in industry, more gasoline and oil is naturally consumed," he declared. "Depression may cut into the sale of new cars, but the old automobiles in use must be maintained. This situation has redounded to the benefit of engine rebuilders."

A feature of the convention and show is the displaying of thirty-two machines used in automobile reconditioning and valued at $300,000.

CANADA MAY REVISE PRESENT TARIFF LAW AFFECTING U. S. CARS

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have benefited, but the Canadian distributors of imported cars have been adversely affected.

Ways and means are reported to be under consideration at Ottawa whereby the discount allowed on cars for duty purposes will be increased again, but this will be offset by a higher duty on cars imported. This would serve to impair profits of outside manufacturers of cars at the factory, but would help distributors.

An increased duty on foreign cars would make it more advantageous for foreign manufacturers to establish production in Canada.

CINCINNATI TRUCK OWNERS UNITE TO FIGHT TAX BOOST

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derived from the proposed law be used on state highways, Frank E. Kirby, manager of the Ohio Association of Commercial Haulers, pointing out that those who contribute the funds would be truck owners operating to a great extent within municipalities. Kirby said under the proposed bill the tax on a truck weighing 9,000 pounds, which now is $79, would be increased to $135. More than 200 persons attended the meeting.

W. C. FISHER TO RESIGN POST WITH RUSCO

Middletown, Conn., May 21.—William C. Fisher, treasurer and general manager of the Russell Manufacturing Company, makers of Rusco brake-lining and other products widely used in the automotive industry, has resigned as general manager, according to announcement by T. M. Russell, president. No action on the resignation has as yet been taken by the board of directors, but it is understood that Mr. Fisher will continue his association with the company in an advisory capacity.

Need of a respite after almost fifty years of continuous association with the Russell company is given as the reason for Mr. Fisher's partial retirement. He joined the concern October 6, 1882, just after finishing his training in the textile department of the Boston School of Technology.

SPARKS *from* DETROIT

Reo of Yesterday and Tomorrow

* * *

Ambitions of Youth

* * *

C. A. Brownell

* * *

Chris Sinsabaugh—Detroit Editor

REO today is far different from the Reo I knew so intimately nearly a quarter of a century ago. I owned a 1908 Reo, the two-cylinder job with the engine under the seat and which was cranked from the side. A chug-chug-chug told you it was ready to go into action and you hopped in and sailed over the Chicago boulevards, conscious you had one of the leading cars of that far distant day. I never will forget the pride of ownership which followed signing the name on the dotted line at the request of Arthur M. Robbins.

It was not until the other day that I renewed my intimate acquaintance with Reo. That came about through Dick Leavell driving to the Fisher Building in one of the new Reo Flying Clouds, which has just been added to the line (Note to reader: See the front page of today's A. D. N.) and asking the column conductor to hop in and whiz around. Having qualified as a critic through recent experiences in the Graham Prosperity Six, the Marmon Sixteen and the Chrysler de Luxe Eight, I hopped.

* * *

IT was one of the Flying Cloud eights and the experience was a happy one. The reaction from the front seat was that the new member of the family comes up to the high standard which always has been found in Reo products. The car bulks big, with a long hood that makes you feel as if you were in a sixteen. It steps along quietly, with an ease of operation that is most impressive. Of course you can tell it is a blood brother of the Royale. There are the sharp Vee-shaped radiator and the sweeping one-piece fenders. Looking at the body, one can understand why Reo uses the word aerodynamic. It looks it and is it.

One of the points that impressed me was that well-known Reo feature, the herringbone-gear silent second, put out two and a half years ago by Reo and which seems to improve with age. Silent as the stars, once a well known slogan of another company, seems to apply when one tries to describe this feature. So far as I could see, or rather hear, that claim that the Reo transmission is as quiet in second as in high seems well justified.

Tagged $1,395, one feels at a bargain sale.

* * *

MORE than 140,000 boys, ambitious to become skilled mechanics and obtain technical educations, are waiting for the semi-finals of the Fisher Body Craftsman's Guild competition in which they are taking part. This is the Fisher Body idea which was announced last fall, an offer of four four-year scholarships, each valued at $5,000, and 980 other awards for the youngsters who do not reach the heights. Each of the candidates is working on a miniature Napoleon coach, with the idea of developing the mechanical ability of the youth of the country and making them master workmen. Since last fall the boys have been busy and we are now approaching the time when the judges will go into action.

Arrangements are now being made for the start of this judging. Each of the states and the District of Columbia will stage a court at which decisions will be made, the winner of each going to Detroit, expenses paid, for the finals which will settle the scholarship awards. The minor prizes will go as state prizes.

* * *

AS settled now, judging and exhibition of these miniature coaches will be held in the following cities: Baltimore, Indianapolis, Louisville, Cincinnati, Jacksonville, Milwaukee, Detroit, Dallas, Oklahoma City, Los Angeles, Washington, Omaha, New York, Boston, Pittsburgh, Memphis, St. Louis, New Orleans, Atlanta, Chicago, Spokane, Portland, Ore., Portland, Me., Rutland, Vt., Concord, N. H., Providence, Wilmington, Hartford, Newark, Richmond, Charleston, W. Va., Charlotte, Columbia, Birmingham, Jackson, Miss., Little Rock, Minneapolis, Fargo, N. D., Sioux Falls, S. D., Cheyenne, Wyo., Denver, Wichita, Des Moines, Butte, Boise, Salt Lake City, Reno, Phoenix and Albuquerque.

* * *

JUST quoting Robert F. Wood, advertising manager of the Autocar Company of Ardmore, Pa., in the discussion as to whether or not automobile salesmen turn over every stone that looks like a prospect: "You and Fred Russell apparently are right on the failure of automobile salesmen to ring doorbells. There are several persons of my acquaintance who,

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Sales-Mechanic Brings in Most Truck Shopwork

Philadelphia Diamond T Branch Finds Method Most Effective Used in Obtaining Service Business

THE most effective method of obtaining service and repair work yet tried by the Philadelphia factory branch of the Diamond T Motor Car Company, 2910 West Fletcher St., is that of personal contact of a sales-mechanic, as he is termed, among the Diamond T truck owners in the territory.

When work is slack in the shop, this employee, who is a first-class mechanic, goes out to call on owners in the area covered, just like a salesman. He makes inquiries as to the condition of the owner's truck, the satisfaction it is giving and what the owner thinks should be done in the way of servicing or repairs. Then, if possible, he inspects the truck, doing this very carefully; writes a report as the result of his examination and submits it with his recommendations. Thus he helps the customer materially from the mechanical angle of his transportation problems, aids in creating good will and gets the business for the shop.

The company also makes use of monthly group specials, or combinations of operations, announced in an interesting way in printed "Bulletins of Service Business" mailed to owners. These specials are figured out on almost a cost basis and are real bargains, the main object of the offers being to lead to other work on the customer's truck. Approximately 50 per cent., or more, of the owners taking advantage of the specials have thus far ordered extra work performed. Specials have not been confined to large groups of merely "easy" servicing, but have covered such operations as light engine overhaul, relining jobs on mechanical and hydraulic brakes and brake and system adjustments.

Here is an example of a light engine overhaul job that was offered at $40 on trucks up to and including 2½ tons and at $48 on units of three tons and up:

Remove cylinder head; take down oil pan; install all new piston rings, wristpins and bushings; take up on all main and connecting rod bearings; grind valves, clean carbon, drain crankcase and refill with new oil.

Here's a reline job on mechanical brakes, offered at $20 for any model up to 2½ tons, and at $25 on 3 tons and up:

Remove rear wheels; install new grease-retaining felt washers; free up camshafts, clevis, brake cross-shaft; reline, equalize and adjust.

Quoting a reline job on hydraulic brakes at $30 for any model up to 2½ tons, and at $35 on 3 tons and up:

Remove all four wheels; free up brake-adjusting cams; reline shoes, bleed line and adjust.

And this is a brake and system adjustment under the head of mechanical brake work performed at $8.50 for any model up to 2½ tons, and at $12.50 on 3 tons and up:

Remove rear wheels; install new grease-retaining felt washers; free up camshafts, clevis, brake cross-shaft; equalize and adjust.

Thus a recent minor adjustment special, at $6: Remove carburetor, clean out all jets and reassemble. Disconnect all screens and gas lines and clean out. Clean and adjust magneto, or distributor points. Remove spark plugs, clean and adjust points and install new gaskets. Burn out carbon. Adjust valve tappets to proper clearance. Install new valve cover plate gaskets. Adjust camshaft and idler gear studs. Tighten all cylinder head bolts. Adjust fan belt. Clean and adjust generator brushes.

And this is a thorough chassis lubrication special, offered some time ago at $2: Add lubricant to transmission and differential to bring to proper level; replace missing grease cups; lubricate chassis thoroughly; lubricate all springs with oil.

According to F. J. Hollearn, branch manager, truck sales are picking up. The company delivered five trucks to individual owners during the week of April 20.

Tying Up With Factory Ad

For Over 15 Years

Hersh Motor Car Co.

Have Been Authorized

FORD Dealers

In this time we have sold over 20,000 of the twenty million Fords made since 1903, mentioned in the adv. on the opposite page.

We Invite You To See Our Displays

Hersh Motor Car Co.

27 Westfield Avenue, Elizabeth

Telephone ELizabeth 2-8030

THE HERSH MOTOR CAR COMPANY of Elizabeth, N. J., Ford dealer, used an original advertising method recently to tie up with a Ford factory ad announcing the 20,000,000th Ford. Taking space on the opposite page, the company announced that in the fifteen years it has been a Ford dealership it has sold more than 20,000 of the 20,000,000 cars Ford has manufactured

CHEVROLET REGISTERS 45 P. C. IN PRICE FIELD IN INDIANAPOLIS ZONE

Indianapolis, Ind., May 21.—Chevrolet accounted for 45 per cent. of all cars registered in its price field in the Indianapolis zone, comprising 44 central Indiana counties, during April, according to announcement made by the Chevrolet Motor Company here.

Figures taken from registrations compiled by the Indianapolis Automobile Trade Association were used in the tabulations, it was said, and showed Chevrolet to have a total of 1,453 in the 44 counties out of a total of 3,239 for the entire price group including Ford, Whippet, Essex, Plymouth and Pontiac.

Sales for the first four months of the year showed approximately the same results, it was stated, with the percentage falling slightly below 45, while it had been above 45 for the month. Over this period Chevrolet registered 3,757 cars out of the 8,490 for the entire division.

Continued upward progress is predicted by the officials of the local zone, who point to the rapid rise of Chevrolet this year in sales in this state. Each month the zone has reached a higher total and it is expected that May will produce a still higher total.

NEW STUTZ DISTRIBUTOR NAMED IN PHILADELPHIA

Philadelphia, May 21.—Stutz Philadelphia, Inc., a new corporation, under the direction of George T. C. Remington, has opened sales headquarters at 2207 Chestnut St. to distribute Stutz cars in eastern Pennsylvania, Delaware and southern New Jersey. Associated with Mr. Remington in the sales department are H. Bradley Eastman and William T. Olson. The service department is under the supervision and management of John Fox, formerly proprietor of the Fox Motor Company at 1409 Melon St. All the executives are well known in the automotive trade in this city.

PARTS SUPPLY FIRM HAS UNIQUE LAYOUT

Union City, May 21.—Paul's Auto Parts Supply here has a unique store arrangement. Parts in the store are arranged in the same order as they are found in an automobile. For example, timing chains and timing gears are in the front of the store; motor and ignition parts are behind these chains, and gears, universal joints and parts toward the back; and parts, such as gears, pinions and axles in the very rear of the store.

Paul has been in business since 1908. Oscar Heinsdorf has been associated with him ever since he started, and his son, John Paul, Jr., has been in the business since he graduated from high school in 1916.

EXECUTIVES ATTEND NEW BUFFALO DODGE OPENING

Buffalo, N. Y., May 21.—Executives of Dodge Brothers Corporation and Advertisers, Inc., attended the opening Thursday of Louis Engel, Jr., newly appointed Dodge direct dealer for Buffalo and the Buffalo territory.

Engel has been prominent in Buffalo automotive circles for twenty-seven years. His former opening, which took place Thursday, included a luncheon tendered the visiting executives and associate dealers of Engel, at the Statler Hotel.

Col. A. C. Downey, vice-president; A. VanDerZee, general sales manager; W. M. Purves, passenger car sales manager; F. H. Akers, regional sales manager, and Frank N. Sim, director of advertising of Dodge Brothers Corporation, and Lee Anderson, president, and Robert Wolfers of Advertisers, Inc., were in the group attending the opening.

NAMED AUBURN DEALER

Bristol, Conn., May 21.—Clayton's Garage, 51 Church St., has been appointed Bristol dealership for Auburn and Cord.

Ormsby Finds Commission Plan for Service Successful

PAYING mechanics a commission for all work, giving each his individual stall, and practically setting him up in business for himself, have proved successful in building business in the service department of the Ormsby Chevrolet Company of San Antonio, Tex. This firm, which is the oldest Chevrolet dealer in San Antonio, enjoys one of the largest volumes of service business in the city, and is noted for having one of the most complete service shops in the state of Texas. T. E. Jones, manager of this department, describes their plans as follows:

"Every mechanic in our service department is practically in business for himself," Mr. Jones explained. "Each man has his own stall, where he does his repair work, each has his own tool cabinet, where he keeps his tools in a neat and orderly manner, and each is paid on a commission basis, so that his earnings are measured by his ability and industry.

"This plan has proven very successful with us in promoting good workmanship, increased business and efficient operation. Each man has his own stall to look after. He must keep it clean, his tools must be kept in good condition and in order, and he must satisfy the customers whom he serves at all times. Success of this plan is shown by the fact that our business has shown a steady increase during the depression period, and our mechanics are the best paid in the city.

"In operation, the mechanic is allotted his work through what we call the 'block' system. Each mechanic has a small wooden block on which his number has been stenciled. When he is working on a job this block is placed in a rack, where it is in plain sight. When he has finished it is placed in an upright chute. When a job comes in we go to this chute and pull out the first block on the bottom. The mechanic whose number is on that block gets the job.

"Mechanics work on a 35-65 percentage basis. The mechanics get 35 per cent. commission on each job they turn out. This commission basis applies to only the line work, however. Body, top, battery, paint and grease work are operated on a straight salary basis. I have been working on several plans for placing these departments on the commission basis, for I believe they would operate more efficiently, and I am sure the men would be better satisfied. However, up to this time I have not found a plan which would work favorably both ways.

"The commission plan stimulates more interest among the mechanics, for they not only work harder and do better work, but they go after business on the outside. We have a large number of 'request' jobs come in. These are jobs which have been worked up by one of the mechanics whom the owner requests when he brings his car in to have the work done. Some of our biggest and best repair jobs have been brought in through work on the part of the mechanics who have seen a good commission in it for them.

"Each night the mechanics are able to tell just what they have earned for that day. Each job as it is completed is turned over for approval. When this is done, the completed work order is sent into the office, and the mechanic's commission figured out and noted on what we call a 'duco' slip. This slip gives the order number, the total cost of the work, and the mechanic's commission. He gets his duco slips each night, and thus knows what he has earned for that day.

"When two men work on one job they are paid according to the work they do. If one man grinds the valves and the other adjusts the brakes, one duco slip is made out for each operation, although all this will appear on one work order form. The mechanic who ground the valves will get a duco slip for this work, showing his commission, and the

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Auburn Car Sales Continue To Top '30 by Big Margin

NEW YORK, May 21.—Retail sales of Auburn passenger cars continued in April to show large gains over a year ago. In twenty-two out of the first twenty-seven states to report new car registrations for April, Auburn sales were higher than in April of last year. This also was true in the District of Columbia.

The Auburn total in the reporting states for April was 1,869, as compared with 648 in the same states in April, 1930, an increase of 188 per cent. This total compared with 1,623 in March in the same states, an upturn of 15 per cent.

For the first four months of this year, Auburn sales in the reporting states were 5,422, as compared with 2,077 in the same states in the corresponding period of last year, a gain of 161 per cent.

Here are the Auburn registrations in the reporting states for April, as compared with April, 1930, and March, 1931:

	April, 1931	April, 1930	March, 1931
Alabama	1	1	0
Arizona	1	2	0
Arkansas	0	2	0
Connecticut	94	51	71
Delaware	4	7	7
Florida	29	5	25
Georgia	13	3	*
Idaho	7	2	4
Illinois	408	95	337
Maryland	41	18	39
Massachusetts	263	104	172
Minnesota	72	20	69
Missouri	75	29	105
Montana	7	4	7
New Hampshire	18	15	7
North Carolina	17	1	13
North Dakota	6	1	2
Ohio	416	127	349
Oregon	17	9	22
Pennsylvania	406	161	292
Rhode Island	41	19	46
South Carolina	1	0	1
South Dakota	7	2	0
Utah	8	18	9
Virginia	23	8	10
West Virginia	37	12	15
Wisconsin	101	32	78
D. of Columbia	51	16	43
Totals	1,869	648	1,623

Following are the registrations in these states for the first four months of 1931, as against the corresponding period of last year:

	1931	1930
Alabama	1	1
Arizona	1	2
Arkansas	0	2
Connecticut	196	101
Delaware	13	20
Florida	73	29
Georgia	*	*
Idaho	12	7
Illinois	1,353	398
Maryland	107	42
Massachusetts	518	246
Minnesota	148	36
Missouri	371	126
Montana	21	14
New Hampshire	26	20
North Carolina	37	5
North Dakota	8	3
Ohio	957	319
Oregon	50	28
Pennsylvania	870	406
Rhode Island	98	50
South Carolina	3	0
South Dakota	7	9
Utah	18	37
Virginia	44	19
West Virginia	63	26
Wisconsin	304	85
Dist. of Columbia	122	46
Totals	5,422	2,071

*Not available.

Automotive Daily News

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Efficiency Saves Wages

TO the average person there probably appears some difficulty in any attempt to maintain wage scales during a period of business depression and falling prices. Our industrial leaders are pretty well agreed that if possible it is wise to maintain wages at or near the levels that have obtained for the past few years. They feel this way because they know that high wages mean generous consumption of all types of products. Every man put back to work at the scale of, say 1928, means just so much more added to the buying power of the country. Acknowledging this, there may still be wonder as to how the miracle can be accomplished. We have recently come upon a case which illustrates how wages may be maintained without loss to the employer and to the benefit of the employee, not to mention that of the country as a whole.

In 1929 bricklayers in the metropolitan district centering in New York were being paid at the rate of $1.87½ per hour. They were then laying 250 to 300 facing bricks a day or about 700 common bricks. Today the bricklayers in the same district are being paid $1.92½ per hour, but they are laying from 400 to 500 facing bricks or 1,200 to 1,400 common bricks per day. This means that the bricklayers are doing almost 80 per cent. more work for the same money they were getting in 1929. Incidentally, they are probably delighted to work a little faster and continue receiving the very satisfactory wage that they are getting. With prices of all commodities reduced, the bricklayers who are working in New York are probably buying more generously than they were two years ago. They are adding a little something to the buying power of the country.

Not in all businesses can a direct saving of this kind be made, but whether it is in a retail store or in a big factory, increased efficiency must be the factor that makes possible wage maintenance. The automotive industry realized this almost as soon as the depression got under way and started putting its house in order. Today there is not a major automotive manufacturing company that is not able to make a profit on a lesser volume than would have yielded one in 1929 or 1928.

Some days ago Secretary Mellon warned us: "Purchasing power, in so far as America is concerned, is dependent to a great extent on the standard of living which obtains in this country. That standard of living MUST BE MAINTAINED AT ALL COSTS." Increased efficiency and painstaking building up of our purchasing power is the way to do it.

Colors and Moods

IT remained for a member of the British motor trade to make the discovery that fashions in car colors depend largely upon the state of business. During good times bright colors are popular. When trade is bad, dark shades predominate in the demand for motor car finishes.

How accurate this diagnosis may be, we cannot pretend to say, but certain it is that after our orgy of bright and brighter colors a couple of years ago, the somber shades have once more taken the lead in popularity. That this shift in taste to darker hues for car finishes came along with the beginning of the depression is probably only coincidence, but it is an interesting speculation, any way.

THERE is now in the Senate of North Carolina a bill that would impose "luxury tax" on all sales of automobiles, trucks, trailers and presumably anything else navigating the highways by anything but animal power. The tax proposed ranges from $5 to $75, according to the selling price of the vehicle.

If any measure has come up this year that is wholly and unmistakably bad in intention this certainly qualifies for the title. North Carolina is to be congratulated on having thought up just about the most iniquitous piece of class legislation to date.

Ormsby Finds Commission Plan for Service Successful

(Continued from Page 3)

one who adjusted the brakes will get another for his share.

"We are able to determine the progress we make from day to day by a graphic chart which we keep in the office. This chart has a column for each day of the month, and each day the line is extended along to indicate the amount of business we have completed up to that time for the month.

"A different colored chalk is used in drawing these lines so we can compare business of the current month with that of previous months. For example, during March the line was black, during April it was red, and during May it is green. This makes it easy to determine at once just how we stand.

"Weekly meetings are held, at which time we discuss plans for bettering our service, increasing business and improving conditions. Every one takes part in the discussion. Little incidents come up during the week which often create a real problem. These are brought out at these meetings, and each man expresses an opinion. We could have these twice a month, but we find that the time to discuss shop talk is while it is still hot. The meetings last only one hour.

"We are unusually fortunate in one respect, and that is the fact that Mr. Ormsby was formerly in the automobile business manufacturing automobiles, then he was a racing car driver, later a distributor, and now a dealer. Consequently, he knows every part about a car, and any trouble that is too hard for us to handle he can help us out. Frequently, we have had difficulty with a motor, and have asked him to come out and give his opinion. He would have us start up the motor, listen a minute, and tell us what was wrong. He has been behind motors for hours, and he knows what they can and should do. This makes our work more interesting, for we know we are working for a man who knows what he is talking about.

"We are now installing two 'short-job' stalls. These will be used for jobs where minor adjustments are required. A man driving in for some slight motor service will be shown to one of these stalls and a mechanic will start on the work immediately. This will be an improvement over leaving the owner at one end of the shop and taking the car to the other.

"We hope to increase business in this manner, for the owner will in the majority of cases stay with the car, and we are always coaching our mechanics how to sell the owner improved motor service. So, as the mechanic works, he will chat with the owner, and if he finds some trouble which should be taken care of soon he will have an opportunity for pointing out, and in many cases getting the owner's consent to have it done.

"We are also making improvements on our lubrication and greasing. We have completed plans for removing one side of the building in the service department and having the oil and grease racks visble from the street, convenient and attractive. In this manner we expect to increase our business, render better service and improve the department.

"Painted guides assist motorists in entering the shop. White strips are painted on the floor from the entrance to the edge of the service floor, which shows motorists just where to drive their cars. The space around these lines is always kept free and clear so the owner may feel free to drive in without danger of getting in the wrong space or running into something. A service salesman meets him as soon as he enters and looks after his wishes. These salesmen are uniformed and are required to keep neat and attractive in appearance at all times.

"All the equipment in our shop is the best. We use special tools for all work—no hammers, punches, etc., to drive our worn parts. Mechanics are not charged for broken tools, for we feel that a good mechanic will take care of the equipment, and such as is accidentally broken should not be charged against him. Such a practice results in hidden tools for which no one can be charged, and stimulates deceit.

"We now send out an inquiry card three days after a job is finished, seeking an opinion from the customer. If he is not satisfied with the work, we urge him to come in and let us look it over, assuring him that he will not be charged additionally for this service, and that he must be satisfied. This uncovers complaints, poor workmanship, and creates good will.

"When such a complaint comes in, the mechanic who did the work must stay with the job until the customer is thoroughly satisfied. He is not credited for such time.

"Commission payment, good working conditions, careful supervision and co-operation from all departments helps to make our department one of the best in the city, and one in which the work is showing a constant increase."

COMING EVENTS

MAY

9-Aug. 9—Berlin, Germany. International Garage Exposition.
27-29—New York City. National Foreign trade Council.

JUNE

8-12—Chicago, Ill. Radio Manufacturers Annual Show.
15-18—Madison, Wis. American Society of Mechanical Engineers, Oil and Gas Power meeting.
14-19—White Sulphur Springs, W. Va. Annual summer meeting, Society of Automotive Engineers.
22-26—Chicago, Ill. American Society for Testing Materials, annual meeting.

SEPTEMBER

26-Oct. 2—Atlantic City, N. J. Annual meeting, American Electric Railway Association.

NOVEMBER

16-12—Chicago, Ill. Annual meeting, American Petroleum Institute, Hotel Stevens.

SPARKS from DETROIT

(Continued from page 2)

though possessed of adequate means, do not own automobiles. So far as I know, no automobile salesman ever has seriously cultivated any of them. Presumably, they would be hard to sell—but there they are!

"And, just to state the matter reversely, I know a woman of much more than adequate means, who, last year, decided to buy her first car. She sought the advice of friends and neighbors in the selection of the style and make and then looked up the nearest agent in the telephone book and asked him to send around a salesman. I suppose that man got a regular commission and that competitors thought that if they had a salesman like him they, too, could get more new business."

* * *

C. A. BROWNELL, at one time advertising manager of the Ford Motor Company, has been located. He is in Birmingham, Ala., and that he has not lost any of his appreciation for a clever wisecrack is proved by his quoting a German grocer in Birmingham, who, discussing business conditions, declared that "not even dose people what don't pay der bills ain't buying nottings now."

* * *

BANKING, financial and business publications are showing an ever increasing interest in the leadership taken by Robert O. Lord, president of Guardian Detroit Union Group, Inc., some time ago when he urged increased co-operation between banks and automobile dealers as one road toward stabilization and received promises of support from banking leaders throughout the country.

The American Bankers' Association Journal, official publication of the powerful association, devotes its leading article in the current issue to an article entitled "Retail Dealers as Credit Risk." The article, by Roy W. Johnson, says that recent developments in the automotive industry indicate that manufacturers are co-operating in plans designed to help distributors and gain the support of banks. The story is built around Lord's letter to correspondents and the promises of co-operation received.

An article along similar lines and again pointing to the Guardian effort is contained in the last issue of the Business Week, special writers having been detailed to analyze the movement and obtain the views of automotive and business leaders.

* * *

ADVICES received at Chevrolet headquarters tell of the success of the Chevrolet Truck Caravan idea which is now being tried out in the Fort Wayne zone, with Don Hunt, zone manager, in charge. The expedition will not wind up until May 26, but as this is written more than 100 towns in the zone have been visited and a prospect list of more than 1,000 secured.

In the caravan are thirty-seven vehicles, each fitted with a different type of commercial body. At each town visited the caravan is the big attraction, being brought to the Chevrolet dealer's place headed by bands, stirring up great public interest. In some places the school children are given half holidays so they may enjoy the sight. Naturally, the citizens too are attracted and many orders are being booked by dealers.

MAINE REGISTRATIONS GAIN; MORE LICENSES ISSUED

Augusta, Me., May 21.—No business depression is indicated in figures just made public by the secretary of state relative to the automotive industry. In the three months of 1931, ending March 31, a total of 81,414 passenger cars were registered in the state as compared with 75,012 in the same period a year ago. The figures also show that 112,431 persons were granted operators' licenses in the same period, as compared with 101,898 in 1930. The coffers of the state were enriched by $1,828,726 in the first three months of 1931. A total of $1,651,651 was taken in last year.

OPENS THIRD BRANCH

Paterson, N. J., May 21.—Standard Motor Parts Company, with stores at Paterson and Hackensack, has opened a third store at Nanuet. This store will serve Rockland county, New York and the extreme northern part of New Jersey. Frank Acker will cover the territory for this store and the inside work will be handled by G. Haddock.

The Key to Lower Delivery Costs

This report on costs in parcel delivery is the result of a survey conducted by the General Motors Truck Company, Pontiac, Mich. Automotive Daily News is pleased to present this entire report in serial form. Complete text of this report in pamphlet form is available at all General Motors Truck Company's dealers and distributorships.

IT is in the purchase of new truck equipment that the delivery executive has one of his greatest opportunities to lower permanently his cost of delivery. For it is in purchasing equipment suitable in every way to his needs, and designed to handle effectively a maximum amount of his work, that major savings over present operation can be effected.

Every operator, of course, has many specific points of design, construction and appearance that he demands in his new truck equipment. That is only natural, since he is in constant contact with truck operation, day by day, and the defects of present equipment are constantly impressed on his mind. Indeed, the buyer of a new truck ordinarily has one central aim in mind:

To buy a new truck which has none of the defects of his present trucks, but has all of the good points, plus a generous number of additional ones.

Buying Demands Careful Study

The only way a buyer can even approach this ideal in the new truck purchase is to list systematically the features of design and construction which he feels are vital to good performance on his job. Obviously, these items will vary with individual stores.

In general, however, there are three major classes of features which determine, to a large extent, the suitability of a truck to parcel delivery:

1. Performance—The ability to maintain consistently high average speeds, over a long life, with freedom from repairs, and without sacrifice of any degree of safety, for the public or the truck and driver. Quick pickup, easy steering, dependable brakes, a sturdy clutch, a powerful engine, and a fast transmission are all essential to this type of performance. Every truck will provide bursts of speed, but consistently safe, high speeds must be built into the design of the engine and chassis.

2. Sound Body Design.—The lowest practical floor height from the ground; comfort in the cab; maximum ease of access to the body for loading and unloading; sturdy construction in the body, especially at all joints; maximum protection for the load, and ample space provision in the body—all these are essential.

3. Attractive Appearance — The parcel truck is a valuable moving billboard, equivalent to the best billboard space the store can buy. It has the particular advantage of being space which carries a message direct to customers and neighbors of customers. In general, the appearance should express the character of the store. Moreover, it should require a minimum amount of effort to keep the truck attractive in appearance.

The table herewith is designed to help the parcel truck executive to determine the most vital features for him to watch when purchasing new truck equipment. It is based on a careful study of repair records of many parcel trucks and on the opinions of scores of delivery executives, drivers, mechanics and others interviewed during the survey. It will pay the buyer of new parcel equipment to study this chart carefully.

(TO BE CONTINUED)

Buying a Profitable Parcel Truck

Careful analysis of sources of loss in parcel delivery, among a large number of operators, points to the need for careful investigation into the following items when purchasing new parcel truck equipment. These items are the outstanding sources of loss which arise from unsuitable or unsatisfactory equipment.

Sources of Loss	Features to Demand in New Equipment
I. Chassis Design	
Brake failure	Simplicity of brake design; ease of adjustment; total braking area provided; absolute surety of brake action at all times.
Clutch failure	Simplicity of clutch design; toughness and effectiveness of friction surfaces; resistance of plates to warping; reasonable stiffness of pedal action to prevent driver from "riding clutch."
Spring failure	Length of springs; number of leaves; toughness and elasticity of spring metal.
Rear axle failure	Simplicity of design; thickness of axle shafts, particularly just inside the wheel bearings; toughness and rated capacity of the axle.
Ignition failure	Simplicity of ignition system; reputation of ignition system manufacturer; availability of ignition service.
Main bearing failure	Pressure lubrication; crankcase ventilation; pressure gauge on dash; oil filter.
Steering gear failure	Maximum surface contact in the steering gear to prevent grooving; simple adjustment, and easy, dependable action.
II. Body Design	
Cab arrangement	Maximum comfort for the driver; ample space for ease of access to front of body; a comfortable helper's seat, which promotes rapid, effective working of the load; maximum visibility for the driver.
Body arrangement	Minimum height from ground to floor of body; quickly accessible and convenient rear opening; maximum width for opening into body at front and rear; convenient and practical arrangement for all special types of parcels handled.
Accessories	Dependable locks, if needed; effective dome light.
Construction	Sound construction, especially at all joints; three-point cab suspension; simple, rigid door construction; sturdiness, with allowance for flexing at all vital joints and mountings in the cab.
III. Appearance	
Paint job	Heavily coated, sanded and hand finished paint job essential to continued good appearance.
Body Design	Simple, lasting lines to prevent early obsolescence of design; freedom from fancy "gingerbread," which quickly deteriorates and raises cost of maintaining appearance.

The Value of Safe High Speed

This is the comparative record of a fast truck and a slow truck in an Illinois store. The figures are based on average daily performance.

	Mileage	Running Time	Average Speed	Parcels Handled
Truck 1	36 mi.	141 min.	15.3 m.p.h.	171
Truck 2	33 mi.	189 min.	10.5 m.p.h.	137
Advantage of Truck 1	3 mi.	48 min.	4.8 m.p.h.	34

Meeting of New York S.A.E. Held on Motor-Ship

New York, May 21.—The final dinner monthly meeting of the season sponsored by the Metropolitan Section, Society of Automotive Engineers, was unique for gatherings of this kind in that it was held aboard the 22,000 ton motorship Lafayette at her pier in North River. This novelty was fully appreciated by the 250 members and guests who took advantage of the opportunity to inspect the powerful Diesel engines which provide the motive power for this new vessel of the French Line which ran her first trials in the latter part of March and made her maiden voyage May 17. It was an appropriate setting for the paper presented by F. Van Rossen Hoogendyk, naval architect and engineer, who chose for his subject "Trend of Modern Diesel Construction and the Trend of Its Uses in Various Fields."

The importance of Diesel engines in naval construction, the speaker remarked, was emphasized by the reports carried in yesterday's newspapers of the launching of the new German battleship of 12,000 tons, 50,000 horse power, which is capable of making 27 knots per hour.

Since 1910 there has been a constant increase in the tonnage of vessels using Diesel engines until 1930, when the percentage of tonnage on the ways was 60 per cent. for vessels using that type power plant.

Both single and double acting, two stroke and four stroke Diesels are being built. Air injection is being eliminated in recent developments.

Mr. Van Rossen Hoogendyk gave a resume of the design features of engines of various types being built for various purposes abroad. Quoted figures for the tonnage for vessels now under construction in various European countries showed the activity in the use of Diesels, while the use of this type of power plant is almost negligible in this country despite the advantages of economy and increased carrying capacity afforded vessels so equipped.

On the subject of semi-Diesel engines the speaker stated that they offered advantages for small power vessels and stationary installations because of their low cost, simplicity and reliability.

Diesel type engines are now used successfully for aircraft and commercial vehicle use. Their use, however, is more general in Germany. One German engine is capable of developing 750 h. p. and weighs approximately 2 pounds per h. p. Precombustion chambers offer the best method of preparing the fuel for use in the cylinders of high-speed engines. This type will prove most suitable in the aeronautic and automotive fields.

An interesting discussion followed the meeting, in which pertinent remarks were made by a representative of the Public Service Corporation of New Jersey, who stated, as a result of observations of a Diesel bus operated by his company, that American manufacturers can build suitable engines for bus service, now that the extra weight of the Diesel engine is not objectionable in view of the economy of that type of engine in operation. His company obtains twice the fuel economy with Diesel engined buses compared with gasoline engine types of comparable power. The bus operated by the New Jersey company was on exhibition, as was Diesel equipment displayed by the Bosch company.

Austin Wolf presided at the final meeting. The recently elected officers were announced for next year. They are: E. H. Hamilton, chairman; J. F. Creamer, vice-chairman; Charles Froesch, vice-chairman for aeronautics; M. C. Horine, treasurer, and A. L. Beall, secretary.

Vane Says Ohio Title Law Will Expose Bootlegging

(Continued from Page 1)

exist in the same scheme of retail distribution. The adoption of the one plan automatically eliminates the other.

"As pointed out in 1929 it is no say so of the National Automobile Dealers Association whether a manufacturers chooses to distribute by dealers or by bootleggers, but if he is publicly soliciting support of dealers and covertly negotiating with bootleggers for the dumping of surplus merchandise in the enfranchised dealer's territory then it is a function of a dealer association to advise dealers to that effect, to advise bankers from whom that dealer may be soliciting loans and to advise the public that such selling is dumping and that so-called list prices are mere come-on devices.

"One other outstanding merit of the certificate of title regulation is the difficulty it puts in the way of selling stolen motor vehicles. Unquestionably a large part of the car stealing that still goes on is inspired by the fact that in half of the states there are no certificates of title laws and consequently stolen automobiles can be readily moved into the used car markets and disposed of to unsuspecting purchasers. Insurance companies in most states having certificate of title laws recognize this fact by lowering theft insurance premiums, another advantage to the dealer as well as to the customer, inasmuch as it reduces the cost of operating an automobile.

"With Michigan, Indiana, Ohio, Pennsylvania, West Virginia, Delaware and Maryland all operating under certificate of title laws, a large continuous area now presents a solid front to car thefts that was but a few years ago a happy hunting ground.

"Altogether there are twenty-four states now requiring certificate of title, just half the states of the union, and in these twenty-four states are approximately 50 per cent. of all the motor vehicles in the country. The other large contiguous area now operating under certificate of title laws is the Pacific Coast section, where California, Oregon, Arizona, New Mexico, Utah, Idaho, Nevada and Colorado, all adjoining states, require such certificates."

CHEVROLET REPORTS NO LET-UP IN SALES; MAY OUTPUT 110,000

(Continued from Page 1)

men during the summer months. Any curtailment, due to seasonal slowing down, will be accomplished by working fewer hours or fewer days, rather than by a reduction in working forces, he said.

FIRESTONE STUDIES POSSIBLE CHANGES FOR 1932 RACE TIRES

INDIANAPOLIS, Ind., May 21.—Tests are now under way at the Indianapolis Motor Speedway by the Firestone Tire and Rubber Company to determine whether certain changes in construction of racing tires for 1932 shall be effected. R. S. Taylor and B. P. Bemis, factory engineers, have been in Indianapolis working with E. Waldo Stein, official A. A. A. tire representative and Firestone racing chief, in experimental runs.

Two cars were sent around the track for forty laps—100 miles—with new tires embodying advanced design at a pace ranging around 108 miles an hour, after which the tires were taken from the wheels and returned to the factory for minute inspection.

Little, if any, tire trouble is anticipated in the coming Memorial Day 500-mile race here after the extraordinary success in last year's race of the new tires, designed especially to carry the extra load imposed by the return of the two-man racer and larger motors and heavier chassis.

Changes for the 1931 race have not been of a major nature, Mr. Stein says, although tread stock is slightly harder than that used in last year's racing tires. Other minor changes have been made, but it is highly probable, he states, that several of the 1930 tires will be used in the May 30 race. It is recalled that much concern about the possibilities of the tires failing under the additional load imposed by the return of the heavier type racing machines last year, and the surprise developed by the race, which did not list a single accident due to tire failure, and although it was a cool day, Mr. Stein minimizes the effect of the temperature on the ultimate outcome.

Sizes and inflation pressures, which range closely to 6.00x20 for the special built machines, and somewhat larger for the stock jobs, and carry about 36 pounds of air, have remained practically the same as in recent previous races, although Mr. Stein declared there is a tendency toward the use of smaller wheels, as in the passenger car field. While the drop center rim now coming into wide use in the industry has not made its appearance in the racing field, the Firestone representative was of the opinion that it might be found advantageous in racing, as it offered a more perfectly round base than the flat rim base now used in racing.

CHAMPION NAMES HANSEN COAST ZONE 5 MANAGER

Toledo, O., May 21.—The announcement is made of the appointment of Edward S. Hansen as district sales manager of Zone 5 for the Champion Spark Plug Company, with headquarters at San Francisco.

Mr. Hansen, who succeeds A. Ross Jarman, who resigned May 1, has been associated with the Champion company in the West for over thirteen years, having worked himself up from field salesman, crew captain, territory representative, and now district sales manager in his territory.

75 MEMBERS ATTEND N. Y. MERCHANTS GOLF

New York, May 21.—Threatening skies in the early morning hours in no way dampened the ardor of the golfers of the Automobile Merchants Association of New York, Inc., who appeared seventy-five strong for the second tournament of the season, at the Winged Foot Golf Club, Mamaroneck, N. Y., on Tuesday.

HOWARD J. MEHL

Indianapolis, Ind., May 21.—Howard J. Mehl, traffic manager of the Diamond Chain and Manufacturing Company, died here Sunday. He has been connected with Diamond for twenty-five years and was 43 years old. Death was attributed to heart disease.

Production--Engineering--Factory-

Resume of 3 Years of Cost Reduction in Operation Of Automotive Equipment

By J. C. BENNETT

Manager, Automotive Department, Associated Oil Company, San Francisco, Cal.

The following, in part, is the second installment of a paper presented before a recent meeting of the northern California section, Society of Automotive Engineers. It will appear serially in Automotive Daily News.

For the purpose of enabling the departments which may use the vehicles to stabilize their operating costs, and, at the same time, to keep before them the cost of operating a vehicle, whether it be used to transport products, single salesmen, or groups of men, or supplies for any of the owner's activities, the automotive department's costs are assessed against the operating department's through the medium of a schedule of rates per mile, graded according to the capacity of the vehicle.

From what has been said, it will be easily evident that the expense incurred on account of drivers' compensation is much more logically that of the operating department than of the department which furnishes the vehicles. The driver of one straight passenger car, or of a light delivery car, may be a salesman, an engineer, a "trouble shooting" mechanic, or a traveling auditor—for any of these the vehicle is used either largely or wholly as a means of passenger transportation.

Today, a five-ton truck may be used in highway transport service, with constant loads over fixed routes. In this case it would not be inappropriate to look upon the driver as essential to the operation of the truck, and to include his expense in the cost per mile of operation, but tomorrow, or the next week, that same truck may be required to function as a sort of traveling storehouse for some piece of construction work, and the driver may not serve in that capacity for more than ten miles—or an hour—per day. In such latter case, it is highly probable that the driver will be employed in some entirely different capacity during by far the greater part of the working day, and the truck will render but a very limited account of itself in its natural function of a transportation unit.

There are two or three minor factors of expense which are not included in the rental rates as applied to the various classes of equipment. These are expense incurred as the result of accident to vehicles while in operation, storage expense and costs of local or special business or other licenses.

Accident expense may be divided into two groups, the first of which will embrace those accidents traceable to mechanical failures of the equipment itself. Any costs which may be incurred as the result of accidents due to this cause are absorbed by the automotive department as a portion of its operating expense.

On the other hand, all accidents which are traceable to any cause which is reasonably within the control of the driver, i. e., is not due to mechanical defect, are assessed directly against the department in whose service the vehicle may have been operating at the time of its mishap. This latter type of expense is charged against the operating department for two reasons: First, it is not a legitimate item in the cost of maintenance; it is one which is entirely within the control of the operating department. Second, there is furnished the material for use in the continuing effort to reduce the number of accidents chargeable to the operating department. The manner in which this information may be used rests entirely with the operating department. It may be said, then, that for this particular purpose the automotive department is functioning essentially in a statistical capacity.

In passing, the experience of two years has shown that collision expense amounts to approximately .1 cent per mile of vehicle operation. There is a difference of about .01 cent between the costs of accidents to trucks and to cars, the former being slightly the higher. It has been found, however, that numerically the experience is divided as between cars and trucks almost in direct proportion to the numbers of vehicles operated.

(To be Continued)

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Sudden starts, quick stops—loads, speed and jolts. All the abuse a truck can get. Call it a test—but it's all in the day's work for Wisconsin Axles.

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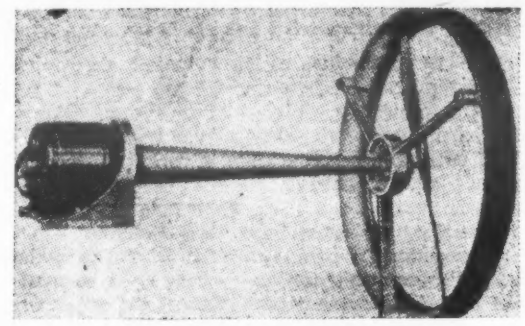
OSHKOSH WISCONSIN

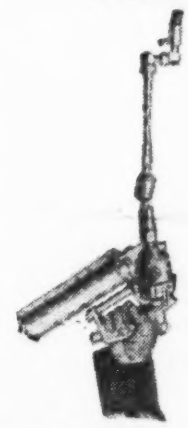
Propellair Ventilating Fan



PROPELLER Ventilating Fan

A new type of airplane propeller ventilating fan, said to be of high efficiency, has been placed on the market by Propellair, Inc., Columbus, O. The fan is a devolpment of Prof. A. I. Brown of Ohio State University. A feature of the fan is the curved entrance housing, which is said to make the entire length of the propeller effective. A simpler type than the one illustrated is available for installation in a wall or duct. The type shown was developed for use where it is desirable to keep the motor out of the duct and is furnished with an extension on the motor shaft.

PLUNGER PROVIDES HIGH PRESSURE IN TRIPLE-A OILER



TRIPLE-A high-pressure oiler

A high-pressure oiler, which is adaptable for filling any type of oil or grease cup, is now marketed by the Triple-A Specialty Company, Chicago, Ill. A pressure of 1,000 pounds, it is claimed, is built up by a hydraulic pump, which is operated by a thumb plunger in the bottom of the oiler.

NEW CLEANER AND SUDS MAKING DEVICE

Ren-O-Lac, a new product for cleaning and renovating automobile finishes, will be marketed shortly by the Green Oil Soap Company, Chicago, Ill.

The company is also preparing to introduce its new instant sudser, which is designed for attachment to a steel drum containing the standard green oil soap manufactured by the company. When connected with a water hose, suds may be withdrawn from the faucet in the lower part of the drum instantly, it is claimed. It is offered for those who prefer not to mix stocks of soap solutions.

Cumulative New Commercial Car Registration Statistics, April, 1931

Returns for today: California and Nevada.

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies. Commercial car registrations do not include busses. **Comparative figures for April, 1930, will be found on Page 7** **In this table 27 states and the District of Columbia.**

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	FWD	Fargo	Federal	Ford	G. M. C.	International	La France-Republic	Mack	Paige	Relay	Reo	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Alabama			183		2				3	194	10	43					2				1		1			1	440	Alabama
Arizona			29		1					73		3					1										107	Arizona
Arkansas		1	98		12					146	2	48					5				1		2				315	Arkansas
Calif.	10	2	464	3	103		1	2	9	1270	23	63	2	11	1		39	2	15	7	27	1	22	2		58	2137	Calif.
Conn.	3	7	168	4	45				9	337	14	25	1	17		1	23		1	10	10		4	7		8	694	Conn.
Delaware	4		35		1					78		9		2			1			1	2						133	Delaware
Florida			144		6					259	2	13					2						1			1	428	Florida
Idaho			56		10					74	1	8		1			4	1			1		2	2		1	161	Idaho
Illinois	2	10	513	33	77			1	16	816	23	121	1	10			7		8	3	32		1	19	4	78	1775	Illinois
Maryland	4	2	176	8	24			1	2	245	13	45		13			7				7	2	8	3		3	563	Maryland
Minn.			385	16	40		2		3	437	15	84	13	4	1	1	9	1			12	1	6	23		7	1060	Minn.
Missouri		7	480	11	41	1			5	465	18	74		2	3	2	6	2	5		3		2	10	1	36	1174	Missouri
Montana			58		8			1		107	1	26					1						2	2		4	210	Montana
Nevada			15		2					53	3	3		5			1	1								1	84	Nevada
N. Hamp.		2	101	6	8					185	4	6	1	4			6	1		5	4			2		1	336	N. Hamp.
Nor. Car.			245		21					281	9	44	4	3	1		2				5	1	2	1		3	622	Nor. Car.
Nor. Dak.			87		14					92	1	46					7	1			2	1		3			254	N. Dakota
Ohio	4	8	501	9	77			1	4	894	36	114		12	3	6	11	6	3	14	29		26	25		64	1847	Ohio
Oregon	1		102		16				2	202	4	17	1	3			4	1	1		1		1			10	366	Oregon
Rho. Isl.	2	2	45		12				2	134	3	9		2			4		1				2	1			219	Rh. Island
Sou. Car.		2	186		11				1	150		6									1		1			7	365	S. Carolina
S. Dakota			79	6	10		1			57	1	30					2				7	2		3			198	S. Dakota
Utah			69		5					100	4	11		1	1		3				1					6	201	Utah
Virginia		4	257	1	22				2	260	9	22	5	10		2					2	1	3	5		13	618	Virginia
Wash'ton			116		13	1			3	258	5	31		2			7				12		2	1		25	477	Wash'ton
West Va.	2	1	148		21				1	209	18	26	3				3			1	1			6		4	444	West Va.
Wisconsin			374	21	22	1	1		7	384	14	54	1	1		3	6		6	4	16	1	3	9	1	16	945	Wisconsin
D. of C.	10	1	33	4	12				2	147	9	16	1	4		1	2		1		1		4			5	253	Dis. of Col.
Totals	42	49	5147	122	636	3	5	6	71	7907	242	997	33	107	10	17	165	16	41	45	178	10	95	124	6	352	16426	**Totals**

Combined report: American La France and La France Republic.

Equipment - - - Development

Greasing Required Points Facilitated by U. S. Method

SPECIALIZED LUBRICATION
AS RECOMMENDED BY THE MOTOR CAR MANUFACTURERS
1 DRAINING & REFILLING WET CLUTCH
2 MOTOR OIL FOR FAN HUB & OIL CUPS
3 TRANSMISSION & DIFFERENTIAL
4 SPICER UNIVERSAL JOINT
5 OIL TIGHT UNIVERSAL JOINT
6 STEERING GEAR
7 WATER PUMP
8 WHEEL BEARING
SPECIAL HUB CAP WRENCH

A SPECIAL GUN for each different requirement is mounted on the flexible panels

A series of special guns to facilitate specailized lubrication at the points specified by the car manufacturers, mounted on sectional steel panels, have just been introduced by the U. S. Air Compressor Company, Cleveland.

According to the manufacturers, this is the first unit of its kind to permit a flexible arrangement of hand grease guns on a display board. Two wall type display units are offered: Model 80, as illustrated, which is equipped with eight guns and hub cap wrench, and Model 50, which is of the same type except that it is a five-gun assortment, with hub cap wrench. An easel stand type display is available at a slight additional cost. The cadmium plated guns may be purchased separately, if desired.

65 TECHNICAL PAPERS ON BOSTON A. S. S. T. PROGRAM

CLEVELAND, May 21.—Sixty-five technical papers are in the tentative program of the annual convention of the American Society for Steel Treating which will be a feature of the National Metal Congress and Exposition in Boston, Sept. 21 to 25. This is a more than 50 per cent. increase over the number presented at the Metal Congress held last fall in Chicago, it was announced at the society's headquarters here.

The variety of subjects covered by the papers is correspondingly widened, according to Ray T. Bayless, assistant secretary of the society in charge of technical activities.

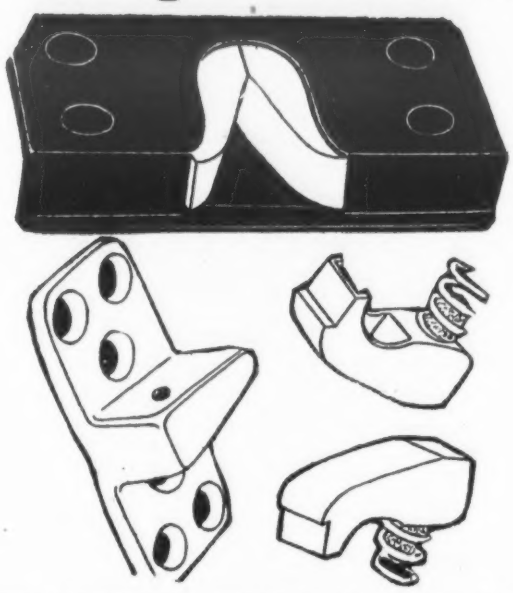
Separate sessions devoted to melting, sheet steel and nitriding are on the program, while the metallurgy commodate the sessions scheduled for afternoon.

K-D REFLECTOR LENS FOR COMMERCIAL VEHICLES

K-D reflecting lens

A reflecting lens for commercial vehicles, available in either green or red and fitted with a universal bracket, is now being manufactured by the K-D Lamp Company, Cincinnati, O.

Mitchell Door Dovetail Is Rigid All-Metal Type



MITCHELL ALL-METAL DOVETAIL showing new type of bumpers

An all-metal rigid type dovetail for motor car doors is a new development of Mitchell Specialty Company, Philadelphia, Pa. The angular design of the male and female members, aided by the correct application of spring pressure, it is claimed, causes the door to spring open when the door latch is released. Another feature is its automatic adjustment of incorrectly hung doors.

The new dovetail is interchangeable with existing designs. It is unnecessary to remove the entire dovetail in order to service it. The bumpers can be replaced by means of a screwdriver.

The male member is supplied with an oil-saturated wick in the reverse part of the stamping, which lubricates the sliding parts. The female member contains a wick impregnated with graphite lubricant.

USL BATTERY SALES CONTINUE TO CLIMB

Niagara Falls, N. Y., May 21.—Tabulations of replacement battery sales for the first half of May show a gain of 12.4 per cent. over the same period in April, according to announcement today by officials of the USL Battery Corporation.

April USL replacement sales also registered a sharp increase over March.

Every Year Since 1909
BROCKWAY-INDIANA TRUCKS

have been meeting every transportation problem.

For 1931 these fast, sturdy new models offer greatest value to the truck buyer looking for service and results.

Whether you buy or sell trucks, get all the facts! Visit our nearest branch or distributor, or write

BROCKWAY MOTOR TRUCK CORP.,
General Offices
Cortland - - - - New York

Cumulative New Commercial Car Registration Statistics, April, 1930

This table is repeated for comparative purposes only. April, 1931, figures will be found on Page 6

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	FWD	Fargo	Federal	Ford	G. M. C.	International	La France-Republic	Mack	Paige	Relay	Reo	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Ala., 1930			280		10			1	2	197	6	17	2	3	1		3				1	1	3	3			530	Ala., 1930
Ariz., '30			51		11			2		80	3	7					2			1			1	1	1	3	163	Ariz., 1930
Ark., 1930			156		6				1	214	9	30		2			4						7	1		1	431	Ark., 1930
Cal., 1930			634	1	130	2		3	14	1511	78	80	26	35	1		123	10	23	8	17	5	31	4	2	134	2872	Cal., 1930
Conn., '30	8	12	173	8	59	2		6	5	325	28	41		35	6		36	1	3	15	2	5	6	4	2	18	800	Conn., '30
Del., 1930	5	4	46		1			1		64	6	9	1				6						1			1	145	Del., 1930
Fla., '30		2	122		9					230	7	10		1			4					1	6				392	Fla., 1930
Idaho, '30			67		9					123	7	17					4					1		1	1		230	Idaho, '30
Ill., 1930	8	20	663	54	72	2		9	19	932	41	111	1	17	3	2	26	2	5	7		14	12	13	1	79	2113	Ill., 1930
Md., 1930	19	12	218	8	29	1	2	3	2	312	25	62	2	22	1	1	24	1	1	3	1	2	25	2	1	11	790	Md., 1930
Minn., '30		9	560	11	60	1		3	4	765	28	129		9			32				4	10	12	16	3	3	1659	Minn., '30
Mo., 1930		13	653	15	50	1		5	11	803	35	97		6	3	1	11	2	3	4	9	5	4	14	7	21	1773	Mo., 1930
Mont., '30			66		3			4		95	5	29		2			3					1	5	4	1	3	221	Mont., '30
Nev., 1930			11		2					23		1										1			1	2	41	Nev., 1930
N. H., '30		9	114	6	7					188	8	12	1	8			18		1	5	2		1	1			381	N. H., 1930
N. C., '30			277		21					251	13	26	1	4			4	1				2	2	5		5	612	N. C., 1930
N. D., '30			112	1	9			1		144	2	77		1	1		11	1						11	2		373	N. D., 1930
Ohio, '30	16	30	651	7	96	6	1	9	13	1214	81	159		21	5	5	48	4	11	22	9	36	48	36	11	72	2611	Ohio, 1930
Ore., '30	2		121		10		7	1	9	310	14	16	1	5			5	3	4			2	7			8	525	Ore., 1930
R. I., 1930	1	2	60		15			1	10	126	18	10		6	1		3		1	1	3		1			2	261	R. I., 1930
S. C., '30			166		3			1	4	139	3	5		1			1						5	1		1	330	S. C., 1930
S. D., '30			79	1	9		1	2		90	2	44	1	2			12	1				3		6			253	S. D., '30
Utah, '30			80		11	2	1			144	2	22		2			3				1					3	271	Utah, 1930
Va., 1930	4	6	422		24				4	396	20	31	7			1	9			7	1		12	6	1	1	952	Va., 1930
Wash., '30	1		152		18			3	6	411	29	25	1	2	1		3	3	4		2		18	1	1	42	723	Wash., '30
W. V., '30		3	205	4	34	1				245	17	44	1	1	1	1	15			2		2		3	1	6	586	W. V., '30
Wis., 1930		3	568	29	36	1	7	3	7	807	32	124		2	2	6	31	2	15	7	2	9	6	9	1	14	1723	Wis., 1930
D. C., '30	5		17	2	3				1	85	13	1		1								1	6			1	136	D. C., '30
Totals	69	125	6724	147	747	19	19	58	112	10224	532	1236	45	188	26	17	441	31	71	82	54	101	219	142	37	431	21897	Totals

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak P. P. M.	Type Cam-shaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Standard Tire Sizes Rear
*Am. La France Chief	2½	3650	Own	L	6	3¾x5	331.0	33.7	65@2100	G	G & O	Borg	Spic	Ross	Str	Vac	DR	Own	4	Tim	Wo	31.8	B4IM	—	156	6200	32x6	32x6D
*Am. La France Chieftain	3-4	5500	Own	L	6	4½x5½	411.0	40.8	75@1800	G	G & O	Borg	Spic	Ross	Zen	Vac	DR	Own	4	Tim	Wo	28.8	B4IM	—	175	7200	36x8S	36x8D
Am. La France Big Chief	6	6725	Own	—	8	4½x6	——	48.6	50@1200	—	—	—	—	—	—	—	—	—	—	—	—	—	——	—	226	20600	40x8S	40x8SD
Austin	400	475	Own	L	4	2.2x3	45.6	7.8	13@3000	G	Hex	Rock	Spic	Own	Til	Gra	Aut	W-G	3	Sal	Sp	5.25	O4M	76.5	75	1210	3.75x16	3.75x16
Autocar A	1½-2	3200	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	Sp	27.9	LO4ID	460	150	5060	34x7	34x7
Autocar D	2-2½	3500	Own	L	6	4 x4¾	358.0	38.4	82@2400	G	Per	Long	Spic	Ross	Str	Vac	DR	Br-L	4	Own	2 R	33.5	LO4ID	460	150	5300	34x7	34x7D
†Autocar SH	2½-3	4300	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	44.0	O2IM	328	114	6770	34x7	34x7D
Autocar SCH	2½-3	4300	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	44.0	O2IM	328	157	6860	34x7	34x7D
†Autocar H	3	4100	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	48.6	O2IM	328	114	6770	34x7	34x7D
†Autocar HS	3½	4600	Own	L	4	4½x5½	350.0	32.4	45@1450	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
†Autocar SHS	3-3½	4800	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Gra	DR	Own	4	Own	2 R	54.3	O2IM	516	114	7900	40x8	40x8D
Autocar SCHS	3-3½	4800	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	54.3	O2IM	516	157	8180	40x8	40x8D
Autocar N	3-3½	4600	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	41.2	OL4IH	574	174	7900	36x8	36x8D
Autocar TEA	3-3½	5350	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	12	Own	2 R	101.1	LO4ID	602	192	8900	36x8	36x8D
Autocar TFA	3½-5	6100	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	12	Own	2 R	101.3	LO4ID	602	192	9300	38x9	38x9D
Autocar C	3½-5	5500	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Long	Spic	Ross	Str	Vac	DR	Own	4	Own	2 R	51.7	O2IM	516	172	9500	42x9	42x9D
Autocar F	7½	6800	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	94.0	LT4DV	674	173	11000	36x7S	40x8SD
*Autocar G	10	9000	Own	L	6	4½x4¾	453.0	48.6	101@2400	G	Own	Br-L	Spic	Ross	Str	Vac	DR	Br-L	7	Tim	Wo	100.0	T6IA	720	171	13000	36x8	36x8D
Autocar N A	22000	4600	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	—	—	Spic	——	Str	Vac	DR	—	4	Own	2 R	54.3	OL4IH	574	174	7990	36x8	36x8D
Autocar N B	22000	4700	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	—	—	Spic	——	Str	Vac	DR	—	4	Own	2 R	54.3	OL4IH	574	192	8160	36x8	36x8D
Autocar N C	22000	4850	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	—	—	Spic	——	Str	Vac	DR	—	4	Own	2 R	54.3	OL4IH	574	218	8320	36x8	36x8D
Autocar N D	22000	4950	Own	L	6	4½x4¾	404.0	43.4	92@2400	G	—	—	Spic	——	Str	Vac	DR	—	4	Own	2 R	54.3	OL4IH	574	242	8480	36x8	36x8D
Brockway 60	*6000	995	Con	L	6	3¾x4	214.7	27.3	61@3000	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	297	132	3200	30x5	30x5
Brockway 65	6500	1195	Con	L	6	3⅞x4¾	248.2	27.3	65@2700	G	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Brockway 75	7500	1290	Con	L	6	3⅞x4¾	248.2	27.3	65@2700	G	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	25.6	C4IM	244	137	3450	32x6	32x6
Brockway 90	9000	1525	Con	L	6	3⅞x4¾	248.2	27.3	65@2700	G	G & O	Borg	Spic	Ross	Zen	Vac	Aut	Br-L	4	Col	Sp	20.9	C4IM	292	149	4050	32x6	32x6
Brockway 120	12000	1990	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Brockway 140	14000	2495	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	35.3	L4IHV	356	156	5500	32x6	32x6D
Brockway 141	17000	2935	Con	H	6	4 x4½	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	356	170	6200	32x6	32x6D
Brockway 170	17000	3160	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6800	32x6	32x6D
Brockway 175	17500	3660	Con	H	6	4¾x4¾	427.5	45.9	100@2400	C	G & O	—	Spic	Ross	Zen	P	Aut	—	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Brockway 195	19500	3820	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Brockway 190	19000	4185	Con	H	6	4½x4¾	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	471	168½	7625	34x7	34x7D
Brockway 220	22000	4560	Con	H	6	4¾x4¾	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Wis	2 R	50.7	L4IHV	546	170	8200	36x8	36x8D
Brockway 250	25000	5950	Con	H	6	4¾x4¾	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Zen	P	Aut	Br-L	4	Tim	Wo	63.7	LT4IVA	664	182	10000	40x8	40x8D
Brockway 290	30000	7250	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
*Brockway 640	40000	9700	Con	L	6	4¾x5¾	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
Chevrolet	½	355	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	3	Own	Sp	13.6	O4IM	101	109	1888	19x4.75	19x4.75
Chevrolet	1½	590	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	O4IM	170	157	2890	30x5	30x5D
Chevrolet	1½	520	Own	H	6	3⅛x3¾	194.0	26.3	50@2600	G	Har	Own	Own	Own	Car	P	DR	Own	4	Own	Sp	33.4	——	—	131	2560	30x5	32x6
Commerce Series S 11	1	1600	Bud	L	6	3¾x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	L4IH	297	142	3900	30x5P	30x5P
Commerce Series S 11	1½	1900	Bud	L	6	3¾x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4300	30x5P	30x5DP
Commerce Series 40	1½	2990	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Commerce Series S 11	2	2030	Bud	L	6	3¾x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6P	32x6D
Commerce Series 40	2	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4900	32x6	32x6D
Commerce Series 40	2½	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Commerce Series 60	2½	4580	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6P	36x6D
Commerce Series 60	3	4680	Bud	L	6	4⅛x5⅛	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7100	36x6P	38x7D
Commerce Series 80	3½	5250	Bud	L	6	4½x5¾	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8200	36x6S	38x12S
Commerce Series 80	4	5330	Bud	L	6	4½x5⅛	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8400	36x6S	36x14S
Commerce Series 100	5	5830	Bud	L	6	4½x5¾	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	——	—	175	9600	36x6S	40x14S
Day Elder 60	1	1095	Con	L	6	3¾x4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	36.3	B4IM	241	135	3200	20x6.00B	20x6.50B
Day Elder 85	1½	1645	Con	L	6	3⅞x4¾	248.3	27.3	65@2700	C	Per	Borg	Spic	Ross	Zen	P	DR	W-G	4	Tim	Sp	42.3	L4IH	229	135	3750	20x6.00B	20x6.50DB
Day Elder 110	2	2095	Con	L	6	3⅞x4¾	248.3	27.3	65@2700	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	44.9	L4IH	306	156	4500	20x7.00B	20x7.00DB
Day Elder 130	2½	2895	Con	H	6	4 x4½	311.0	38.4	73@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Sp	40.7	L4IH	354	150	6400	20x7.50B	20x7.50DB
Day Elder 160	3	3695	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	36.1	L4IH	393	156	6600	20x7.50B	20x9.00DB
Day Elder 200	4	4295	Con	H	6	4 x4½	339.3	38.4	82@2400	C	Per	Br-L	Spic	Ross	Zen	P	DR	Br-L	4	Tim	Wo	43.5	L4IHV	489	156	7400	20x9.00B	20x9.00DB
Day Elder 240	5	5500	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	4	Tim	Wo	50.8	L4IHV	520	162	9300	38x9P	38x9DP
*Day Elder 285	8	6000	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	71.2	L6IHV	674	164	12000	20x8.25B	20x8.25DB
*Day Elder 345	10	7500	Con	H	6	4¾x4¾	427.5	45.9	100@2600	C	Per	Br-L	Blo	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	79.9	T4rIA	490	164	12500	20x9.00B	20x9.00DB
*Day Elder 402	12	9000	Con	L	6	4¾x5¾	611.4	54.2	127@2300	G	Per	Br-L	Bla	Ross	Zen	P	DR	Br-L	7	Tim	Wo	84.6	T4rIA	490	164	14000	20x9.75B	20x9.75DB
Diamond T 216	1½	695	Her	L	6	3½x4½	228.0	27.3	56@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	4	Cla	Sp	——	L4IH	252	135½	3130	20x6.50B	20x6.50B
Diamond T 291	1½	1475	Her	L	6	3½x4½	268.0	29.4	60@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	4	Cla	Sp	——	L4IH	279	156½	4500	20x6.50B	20x6.50DB
Diamond T 303	2-2½	1745	Her	L	6	3⅞x4½	298.0	33.7	67@2400	G	G & O	Borg	Spic	Ross	Zen	P	Aut	Cov	4	Cla	Sp	——	L4IHV	350	159¾	5000	20x7.00B	20x7.00DB
Diamond T 551	2½-3	2250	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Tim	Sp	——	L4IHV	408	168	5600	20x7.50B	20x7.50DB
Diamond T 504	3	2675	Her	L	6	4 x4½	339.0	38.4	74@2400	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	4	Wis	2 R	——	L4IHV	408	176½	6400	20x8.25B	20x8.25DB
Diamond T 506	3	3000	Her	L	6	4¼x4½	383.0	43.3	85@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	408	181	6400	20x8.25B	20x8.25DB
Diamond T 603	3-4	3300	Her	L	6	4¾x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	499	169	7500	20x9.00B	20x9.00DB
Diamond T 606	3-4	3440	Her	L	6	4¼x4¾	453.0	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	L4IHV	499	187½	7500	20x9.00B	20x9.00DB
Diamond T 750	4-5	4800	Her	L	6	4½x5¼	529.0	51.3	——	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Cov	5	Wis	2 R	——	W4I	552	178	8300	22x9.75B	22x9.75DB
*Diamond T 801	4	4140	Her	L	6	4¾x4¾	428.4	45.9	94@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Own	Wo	——	L6IHV	571	189½	8300	36x8P	36x8DP
*Diamond T 1200	6	5800	Her	L	6	4½x4¾	453.3	48.6	100@2200	G	G & O	Cov	Spic	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	190	11000	34x7P	34x7DP
*Diamond T 1600	8	6220	Her	L	6	4¾x4¾	479.0	51.3	104@2400	G	G & O	Cov	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	190	11700	36x8P	36x8DP
*Diamond T 1601	8	7500	Wak	L	6	5 x5¼	677.4	60.0	127@2000	G	G & O	Br-L	Spic-Blo	Ross	Zen	P	Aut	Br-L	7	Tim	Wo	——	T4IA	238	194	12500	36x8P	36x8DP
Dodge Bros. UF 10	½	515	Own	L	6	3¼x4¼	196.0	21.0	48@2800	G	Fed	Borg	Own	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L4IH	114	109	1925	19x5.00	19x5.00
Dodge Bros. F 10	½	695	Own	L	4	3¼x4¼	211.5	25.3	66@3200	G	Fed	Borg	Un	W-G	Car	P	DR	Own	3	Own	Sp	14.2	L4IH	114	109	1975	19x5.25	19x5.25
Dodge Bros. U 1	¾	435	Own	L	4	3¼x4¼	196.0	21.0	45@2800	G	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	21.6	L4IH	189	124	2260	20x5.50B	20x5.50B
Dodge Bros. DA 1	¾	795	Own	L	4	3¼x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	4	Own	Sp	36.8	L4IH	189	124	2360	20x5.50	20x5.50
Dodge Bros.	1	795	Own	L	4	3¼x4¼	196.0	21.0	45@2800	C	Fed	Borg	Spic	Han	Car	Vac	NE	Own	3	Own	Sp	36.1	L4IH	205	133	2590	20x6.00	32x6
Dodge Bros.	1	895	Own	L	6	3¼x3⅞	208.0	27.3	63@3200	C	Fed	Borg	Spic	Han	Zen	Vac	NE	Own	3	Own	Sp	33.4	L4IH	205	133	2690	20x6.00	32x6
Dodge Bros. UF 30	1½	595	Own	L	4	3¼x4¼	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2581	20x6.00	32x6
Dodge Bros. UF 31	1½	670	Own	L	4	3¼x4¼	196.0	21.0	48@2800	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2757	20x6.00	32x6
Dodge Bros. F 31	1½	770	Own	L	6	3¼x4¼	211.5	23.4	66@3200	G	Fed	Borg	Cle	W-G	Car	P	DR	Own		Own	Sp	32.1	L4IH	229	165	2807	20x6.00	32x6
Dodge Bros. F 30	1½	695	Own	L	6	3¼x4¼	211.5	25.3	66@3200	C	Fed	Borg	Cle	W-G	Car	P	DR	Own	4	Own	Sp	37.1	L4IH	120	136	2631	20x6.00	32x6
Dodge Bros. F 35	1½	1425	Own	L	6	3¼x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	140	3780	20x6.00	20x6 00D
Dodge Bros. F 36	1½	1485	Own	L	6	3¼x3⅞	208.0	27.3	63@3200	G	Long	Borg	Cle	Han	Zen	P	DR	Own	4	Own	Sp	41.4	L4IH	311	165	3972	20x6.00	20x6 00D
*Dodge Bros. F 40	2	1995	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	159	5173	20x6.50	20x6.50D
*Dodge Bros. F 41	2	2035	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	43.7	L4IH	350	165	5211	20x6.50	20x6.50D
Dodge Bros.	3	1845	Own	L	6	3¾x4½	241	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	135	4235	32x6	32x6D
Dodge Bros.	3	1895	Own	L	6	3¾x4½	241	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	41.4	L4IH	382	165	4520	32x6	32x6D
Dodge Bros.	3	1945	Own	L	6	3¾x4½	241	27.3	78@3000	C	Long	Borg	Un	Han	Zen	Vac	NE	Own	4	Own	Sp	46.3	L4IH	382	165	4715	32x6	32x6D
Dodge Bros. F 60	3	2645	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	2 R	48.8	L4IH	416	146	5543	32x6	32x6D
*Dodge Bros. F 61	3	2575	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	170	5789	32x6	32x6D
*Dodge Bros. F 62	3	2695	Own	L	6	3⅝x5	309.6	31.5	96@3000	G	Long	Borg	Cle	Sag	DL	P	DR	Own	4	Own	Sp	48.8	L4IH	416	195	5901	32x6	32x6D
Essex Com.	¾	445	Own	—	6	2¾x4½	——	18.2	——	—	—	—	—	—	——	Mar	Vac	Aut	Own	3	Own	Sp	17.8	——	—	110	1930	30x5	31x5.50
Federal D	1½	795	Con	L	4	3⅞x4¼	209.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L4IH	377	131	3225	20x6.00	32x6
Federal E 6	1½	895	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	34.6	L4IH	377	132	3275	20x6.00	32x6
Federal F 7	1½	1525	Con	L	6	3⅝x4¾	248.0	27.3	64@2500	C	Long	Borg	Pet	Gem	Zen	P	DR	Own	4	Tim	Sp	29.2	L4IH	414	132	3765	30x5	30x5D
Federal A 6	2	1855	Con	L	6	3⅝x4¾	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Cla	Sp	38.5	L4IH	450	151	4580	32x6	32x6D
Federal A 6 T	2½	2185	Con	L	6	3⅝x4¾	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	Sp	41.3	L4IHV	659	151	4950	32x6	32x6D
Federal A 6 T W	2½	2390	Con	L	6	3⅝x4¾	248.0	27.3	64@2500	C	Long	Borg	Pet	Ross	Zen	Vac	DR	Own	4	Tim	We	42.0	L4IHV	659	151	4950	32x6	32x6D
*Federal D S W	2½-3	1050	Con	L	4	3⅞x4¼	209.5	24.0	48@2500	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	140	3925	20x6.00	32x6
*Federal E 6 S W	2½-3	1150	Con	L	6	3⅜x4	215.0	27.3	60@2600	C	Long	Borg	Spic	Gem	Zen	P	DR	W-G	4	Cla	Sp	40.8	L6IH	566	145	3975	20x6.00	32x6
Federal T 10 B	2½-3	2740	Con	H	6	4 x4½	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	Sp	44.5	L4IHV	659	165	6550	34x7	34x7D
Federal T 10 W	2½-3	2915	Con	H	6	4 x4½	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	Dlt	Own	4	Tim	Wo	44.0	L4IHV	659	165	6550	34x7	34x7D
Federal T 10 D R	2½-3	2915	Con	H	6	4 x4½	311.0	38.4	75@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Own	4	Tim	2R	45.6	L4IHV	659	165	6550	34x7	34x7D
Federal U 6	3-3½	3860	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	Wo	64.6	L4IHV	767	165	7220	34x7	34x7D
Federal U 6 D R	3-3½	3860	Con	H	6	4 x4½	339.0	38.4	85@2200	C	Long	Borg	Pet	Ross	Str	P	DR	Br-L	7	Tim	2R	69.6	L4IHV	767	165	7220	34x7	34x7D
Federal 4 C 6 A	4-5	4735	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	L4IHV	394	192	8330	36x8	36x8D
Federal 4 C 6 A D R	4-5	4735	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2R	80.6	L4IHV	894	192	8330	36x8	36x8D
Federal 4 C 6 A B	4-5	4960	Con	H	6	4¼x4¾	381.0	40.8	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	Wo	72.2	T4IA	921	192	8850	36x8	36x8D
Federal 4 C G A B D R	4-5	4960	Con	H	6	4¼x4¾	381.0	45.9	90@2200	C	Long	Borg	Pet	Ross	Zen	P	DR	Br-L	7	Tim	2R	80.6	T4IA	421	192	8850	36x8	36x8D
*Federal U 6 S W	6	6000	Con	H	6	4¼x4¾	380.9	40.8	90@2200	C	Long	Bor

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE EIGHT)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Transmission Make	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
General Motors T-31	*14000	1845	Own	H	6	3 1/8 x 4 5/8	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	Sp	35.5	B4IM	524	141	4575	32x6P	32x6DP
General Motors T-42	*15000	1845	Buick	H	6	3 1/8 x 4 5/8	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	Sp	33.4	B4IM	524	141	4725	34x7P	34x7DP
General Motors T-44	*16000	2095	Buick	H	6	3 1/8 x 4 5/8	257.5	28.3	76@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	2 R	40.9	B4IM	524	141	5005	32x6P	32x6DP
General Motors T-51	*19000	2565	Own	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	Sp	40.6	B4IM	574	155	6100	34x7P	34x7DP
General Motors T-55	*19000	2690	Own	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Eat	2 R	50.8	B4IM	574	155	6150	34x7P	34x7DP
General Motors T-60	*22000	3035	Buick	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Mar	P	DR	Mun	4	Tim	Wo	52.5	B4IM	793	154	6925	34x7P	34x7DP
General Motors T-61	*22000	3445	Own	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	Own	Spic	Sag	Str	P	DR	Mun	4	Tim	Wo	52.5	B4IMV	685	154	6925	20x9.00B	20x9.00DB
General Motors T-82	*24000	3795	Own	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	——	Pet	Sag	Str	P	DR	Mun	12	Tim	Wo	143.0	B4IMV	865	155	7500	20x9.00B	20x9.00DB
General Motors T-85	*26000	5600	Own	H	6	4 1/4 x 5 1/2	468.0	43.3	115@2200	G	Long	Own	Spic	Sag	Str	P	DR	Ful	4	Tim	2 R	53.3	B4IM	685	171	10350	20x9.75B	20x9.75DB
††General Motors T-90	*28000	5285	Own	H	6	3 3/4 x 5	331.4	33.7	94@2500	G	Long	Own	Pet	Sag	Str	P	DR	Mun	12	Tim	Wo	129.0	BrIA	870	185	9400	20x7.50B	20x7.50DB
††General Motors T-95	*34000	7545	Own	H	6	4 1/4 x 5 1/2	468.0	43.3	115@2200	G	Long	——	Spic	Sag	Str	P	DR	Ful	4	Tim	Wo	53.3	B6IA	——	189	13250	34x7P	34x7DP
††General Motors T-96	*34000	7195	Own	H	6	4 1/4 x 5 1/2	468.0	43.3	115@2200	G	Long	——	Spic	Sag	Str	P	DR	Ful	4	Tim	2 R	51.1	B6IA	——	189	13250	34x7P	34x7DP
Gramm A X 4	1	795	Con	L	4	3 7/8 x 4	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	2900	20x6.00	20x6.50
Gramm A X 6	1	895	Con	L	6	3 3/8 x 4	214.0	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	2900	20x6.00	20x6.50
Gramm B X 4	1½	895	Con	L	4	3 7/8 x 4 1/4	200.4	24.0	50@2800	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3100	20x6.00	20x6.00D
Gramm B X 6	1½	995	Con	L	6	3 3/8 x 4	214.7	27.3	61@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	36.3	L4IH	380	131	3100	20x6.00	20x6.00D
Gramm B	1¾	1495	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2900	G	Per	Own	Blo	Ross	Zen	Vac	Aut	Cov	4	Tim	Sp	34.3	L4IH	278	140	3800	20x6.50	20x6.50D
Gramm C	2	1795	Lyc	L	6	3 5/8 x 4 1/2	278.6	31.5	82@2600	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	31.0	L4IH	353	160	4820	20x7.00	20x7.00D
††Gramm C X	2	1095	Con	L	4	4 1/8 x 4 1/4	227.0	27.2	55@2600	G	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	3300	20x6.50	20x6.50D
Gramm C X	2	1295	Con	L	6	3 3/8 x 4 3/8	248.2	27.3	70@3000	C	Per	Jon	Blo	Ross	Til	P	Aut	W-G	4	Tim	Sp	37.0	L4IH	452	131	3300	20x6.50	20x6.50D
Gramm D	2½	1995	Lyc	L	6	3 3/4 x 4 1/2	299.0	33.7	90@2200	G	Per	Jon	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	33.0	L4IHV	339	160	5100	20x7.50	20x7.50D
Gramm E	3	2595	Lyc	L	6	3 7/8 x 5	353.8	36.0	90@2200	G	Per	Own	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	35.0	L4IHV	659	160	5500	20x8.25	20x8.25D
Gramm E Y	3	3595	Con	H	6	4 1/8 x 4 3/4	380.8	40.8	90@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Tim	Sp	30.0	L4IHV	——	190	6750	20x7.50	20x7.50D
Gramm G Y	4	4345	Con	H	6	4 3/8 x 4 3/4	428.4	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	28.0	BW4IM	——	210	7200	20x8.25	20x8.25D
Gramm G W	4	5175	Con	H	6	4 3/8 x 4 3/4	428.0	45.9	100@2200	C	Per	Ful	Blo	Ross	Zen	P	Aut	Cov	4	Wis	2 R	——	41A	864	157	8900	20x9.00	20x9.00D
Gramm H Y	5	6545	Con	L	6	4 3/4 x 5 3/4	611.4	54.1	127@2300	G	Per	Ful	Blo	Ross	Zen	P	Aut	Ful	4	Wis	2 R	25.2	41A	——	236	9600	36x8	36x8D
Indiana 60	*6000	995	Con	L	6	3 3/8 x 4	214.7	27.3	61@3000	C	G & O	Borg	Spic	Ross	Zen	P	Aut	W-G	3	Col	Sp	19.8	B4IM	297	132	3200	30x5	30x5
Indiana 64	6500	1195	Con	L	6	3 3/8 x 4 5/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	3	Col	Sp	21.3	C4IM	244	137	3400	30x5	30x5
Indiana 74	7500	1290	Con	L	6	3 3/8 x 4 5/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	25.6	C4IM	190	137	3450	32x6	32x6
Indiana 88	9000	1525	Con	L	6	3 3/8 x 4 5/8	248.2	27.3	65@2700	C	Long	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Col	Sp	26.9	C4IM	292	149	4050	32x6	32x6
Indiana 111 XW	12500	1850	Her	L	4	4 x5	251.3	25.6	46@2000	G	McC	Borg	Spic	Ross	Str	Vac	Aut	Br-L	4	Wis	2 R	35.2	K2IM	270	120	3740	32x6	32x6D
Indiana 120	12000	1990	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Sp	31.3	L4IH	353	156	5200	32x6	32x6D
Indiana 140	14000	2495	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	35.3	L4IHV	356	156	5500	32x6	32x6D
Indiana 141	17000	2935	Con	H	6	4 x4 1/8	311.0	38.4	73@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.2	L4IHV	380	170	6200	32x6	32x6D
Indiana 170	17000	3180	Con	H	6	4 1/8 x 4 3/4	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	46.6	L4IHV	380	170	6800	32x6	32x6D
Indiana 175	17500	3660	Con	H	6	4 3/8 x 4 3/4	427.5	45.9	100@2400	C	G & O	——	Spic	Ross	Str	P	Aut	——	5	Wis	2 R	45.3	L4IHV	380	170	7200	34x7	34x7D
Indiana 195	19500	3820	Con	H	6	4 1/8 x 4 3/4	380.9	40.8	89@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	49.5	L4IHV	471	170	7500	34x7	34x7D
Indiana 190	19000	4185	Con	H	6	4 1/8 x 4 3/4	380.9	40.8	89@2400	C	Long	Borg	Spic	Ross	Str	P	Aut	Br-L	7	Tim	Wo	78.6	T2IMV	500	168½	7625	34x7	34x7D
Indiana 220	22000	4560	Con	H	6	4 3/8 x 4 3/4	427.5	45.9	100@2400	C	G & O	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Wis	2 R	50.7	L4IHV	546	170	8200	36x8	36x8D
Indiana 250	25000	5950	Con	H	6	4 3/8 x 4 3/4	427.5	45.9	100@2400	C	Long	Br-L	Spic	Ross	Str	P	Aut	Br-L	4	Tim	Wo	83.7	LT4IHV	664	182	10000	40x8	40x8D
Indiana 290	30000	7250	Con	L	6	4 3/4 x 5 3/4	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	95.0	T4IA	676	182	10750	38x7P	40x14S
*Indiana 640	40000	9700	Con	L	6	4 3/4 x 5 3/4	611.4	54.1	116@1800	C	Long	Br-L	Spic	Ross	Str	P	L-N	Br-L	7	Tim	Wo	90.9	T4IA	864	212	14000	38x7P	36x10S
International A W 1	¾	695	Wak	L	4	3 1/2 x 4 1/2	173.0	19.6	30@2700	G	Mod	Rock	Mec	Ross	Zen	Vac	DR	Mec	3	Own	Sp	17.8	B4IM	212	136	2620	20x5.25	20x5.25
International Sp. Del.	¾	675	Wak	L	4	3 1/2 x 4 1/2	173.0	19.6	30@2700	G	Long	Rock	Mec	Ross	Zen	Vac	DR	Mec	3	Eat	Sp	60.3	BE4IM	256	124	2200	30x5.25	30x5.25
International 6 Sp. Spec.	1	675	Wak	L	4	3 1/2 x 4 1/2	173.0	19.6	30@2700	G	Long	Rock	Mec	Ross	Zen	Vac	DR	Mec	3	Eat	Sp	52.6	BE4IM	292	124	2430	30x5	30x5
International S 24	1¼	1160	Lyc	L	4	3 3/4 x 5	220.9	22.5	43@2350	G	Long	Own	Mec	Col	Zen	Vac	DR	Own	3	Eat	Sp	21.3	B4IM	346	130	3200	30x5	30x5
International S 26	1¼	1310	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2800	G	Long	Own	Mec	Col	Zen	Vac	DR	Own	3	Eat	Sp	21.3	B4IM	346	130	3250	30x5	30x5
International A W 2	1½	675	Wak	L	4	3 1/2 x 4 1/2	173.0	19.6	30@2700	G	Long	Rock	Mec	Ross	Zen	Vac	DR	Mec	3	Own	Sp	60.3	BE4IM	492	136	2980	20x5.50	20x6.00
International S F 34	1½	1450	Lyc	L	4	3 3/4 x 5	221.0	22.5	43@2350	G	Long	Own	Mec	Col	Zen	Vac	DR	Own	3	Eat	Sp	22.6	BE4IM	346	140	3520	30x5	32x6
International A L 3	1½	1450	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2800	G	Mod	Own	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	42.9	B4IM	295	138	4300	20x6.00	20x6.00D
International S F 36	1½	1600	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2800	G	Long	Own	Mec	Col	Zen	Vac	DR	Own	3	Eat	Sp	22.6	BE4IM	346	140	3570	30x5	32x6
International A 2	1½	675	Wak	L	4	3 5/8 x 4 1/2	186	21.0	39@2400	O	Mod	Mec	Mec	Ross	Zen	Vac	DR	W-G	4	Own	Sp	36.5	BE4IM	212	136	2800	5.50x20	6.00x20
International B 2	1½	675	Wak	L	4	3 5/8 x 4 1/2	186	21.0	39@2400	G	Mod	Mec	Mec	Ross	Zen	Vac	DR	Mec	3	Own	Sp	47.3	BE4IM	212	136	2830	5.50x20	6.00x20
International S D 44	2	1590	Lyc	L	4	3 3/4 x 5	221.5	22.5	43@2350	G	Long	Own	Mec	Col	Zen	Vac	AB	Own	4	Eat	Sp	40.6	BE4IM	421	117	3700	30x5	32x6
International S D 46	2	1740	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2800	G	Long	Own	Mec	Col	Zen	Vac	AB	Own	4	Eat	Sp	40.6	BE4IM	421	117	3750	30x5	32x6
International S F 46	2	1950	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.3	61@2800	G	Long	Own	Mec	Col	Zen	Vac	DR	Own	4	Eat	Sp	40.6	BE4IM	421	140	4000	32x6	32x6D
International A 4	2	1860	Own	H	6	3 5/8 x 4 1/2	279.0	31.5	65@2800	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	47.8	BE4IM	378	145	5070	32x6	32x6D
International H S 54	2½	3850	Hall	H	4	4 1/4 x 5 1/2	312.0	28.9	54@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Eat	2 R	60.5	BE4IM	726	148	8000	36x5S	36x8S
International H S 54 C	2½	3850	Hall	H	4	4 1/4 x 5 1/2	312.0	28.9	54@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	Ch	63.8	BO4IM	732	148	8665	36x5S	36x10S
International W 1	2½	3850	Hall	H	4	4 1/4 x 5 1/2	312.0	28.9	54@1800	C	Own	Own	Own	Own	Zen	Vac	DR	Own	5	Own	2 R	60.5	BE4IM	710	148	8300	36x5S	36x8S
International A 5	3	2550	Own	H	6	3 5/8 x 4 1/2	279.0	31.5	65@2800	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	52.6	BE4IM	430	156	5606	34x7	34x7D
International A 6	3	2675	Own	H	6	3 5/8 x 4 1/2	279.0	31.5	65@2800	G	Mod	Own	Mec	Ross	Zen	Vac	DR	Own	5	Own	Sp	62.5	BE4IM	430	156	5750	34x7	34x7D
International H S 74	3½	4850	Hall	H	4	4 3/4 x 5 1/2	390.0	36.1	60@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Eat	2 R	70.5	BE4IM	850	160	10700	36x5S	40x12S
International H S 74 C	3½	4850	Hall	H	4	4 3/4 x 5 1/2	390.0	36.1	60@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	Ch	79.1	BO4IM	736	160	11000	36x6S	40x12S
International W 3	3½	4850	Hall	H	4	4 3/4 x 5 1/2	390.0	36.1	60@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	2 R	76.5	——	——	160	10125	36x6S	40x12S
International H S 104 C	5	5500	Hall	H	4	4 3/4 x 5 1/2	390.0	36.1	60@1800	C	Own	Own	Own	Own	Zen	Vac	RB	Own	5	Own	Ch	90.5	BO4IM	736	160	11095	36x6S	40x14S
La France Rep. A 1	6000	795	Lyc	L	6	3 x 4 3/4	201.5	21.5	60@2500	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	36.1	L4IH	——	132	3000	20x5.50	32x6
La France Rep. C 1	7500	1295	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.4	61@2750	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	29.1	L4IH	——	144	3300	20x6.00	32x6
La France Rep. D 1	9000	1595	Lyc	L	6	3 1/4 x 4 1/2	224.0	25.4	61@2750	G	G & O	Borg	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	37.9	L4IH	——	144	3725	30x5	30x5D
La France Rep. F-3	13000	2395	Lyc	L	6	3 3/4 x 4 1/2	299.0	33.7	80@2500	G	Per	Ful	Spic	Han	Zen	Vac	Aut	Ful	4	Tim	Sp	40.1	L4IHV	——	174	5520	34x7	34x7
La France Rep. H 2	16000	2985	Lyc	L	6	3 7/8 x 5	354.0	36.0	85@2300	G	Per	Ful	Spic	Han	Zen	Vac	Aut	Ful	4	Wis	2 R	41.6	L4IHV	——	174	6370	34x7	34x7D
La France Rep. M 2	20000	4000	Wak	L	6	4 3/8 x 5 1/8	462.0	46.0	97@2000	G	Per	Ful	Spic	Han	Zen	Vac	Aut	Ful	5	Wis	2 R	48.1	L4IHV	——	174	7500	36x8	36x8D
La France Rep. 35-2	24000	5600	Wak	L	6	4 1/2 x 5 3/4	549.0	48.6	98@1850	G	Own	Ful	Spic	Han	Zen	Vac	Aut	Ful	4	Wis	2 R	45.4	L4IHV	——	174	9250	38x9	38x9D
Maccar 30 A	1½	1960	Bud	L	6	3 3/4 x 4 1/2	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	31.1	L4W	315	171	4850	32x6	32x6D
Maccar 40 A	2	2400	Bud	L	6	3 3/4 x 4 1/2	298.0	33.7	83@2800	G	Per	Br-L	Spic	Ross	Str	P	DR	Br-L	4	Tim	Sp	40.6	L4W	365	171	5340	32x6	32x6D
Maccar 56	3	3350	Bud	L	6	3 3/4 x 5	311.0	33.7	72@2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	4	Wis	2R	34.5	L4W	380	183	6200	34x7	34x7D
Maccar 60	3	3950	Bud	L	6	4 1/8 x 5 1/8	411.0	40.8	103@2100	G	Per	Br-L	Spic	Ross	Str	Vac	DR	Br-L	5	Tim	Wo	37.2	L4W	377.5	183	6600	20x9.00	20x9.00D
Maccar 66 A	4	5800	Her	L	6	4 3/8 x 4 3/4	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	86.7	4 A	617.5	206	8200	20x9.75	20x9.75D
Maccar 86 A	5	5950	Her	L	6	4 5/8 x 4 3/4	479.0	51.3	106@2100	G	Per	Br-L	Spic	Ross	Zen	Vac	DR	Br-L	7	Tim	Wo	85.0	4 A	623	206	9500	20x10.50	20x10.50D
Mack B L	1½	2500	Own	L	6	3 1/4 x 5	248.9	25.3	63@2800	G	Own	Own	Spic	Gem	Str	Vac	NE	Own	4	Tim	Sp	Opt	L4IH	302	148	——	20x6.00B	20x6.00DB
††Mack B G	2	3000	Own	L	6	3 5/8 x 5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Sp	Opt	O4IV	415	156	——	32x6	32x6D
Mack B F	2½	3850	Own	L	6	3 5/8 x 5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	RB	Own	4	Own	Sp	Opt	O4IV	450	2-Opt	——	8.25x20B	8.25x20DB
Mack A B	2½-3	4350	Own	L	4	4 1/4 x 5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2R	Opt	O4IV	471	2-Opt	——	34x7	34x7D
††Mack A B	2½-3	4000	Own	L	4	4 1/4 x 5	283.7	28.9	60@2200	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	2-Opt	——	34x7	34x7D
Mack A B	2½-3	4800	Own	L	6	3 5/8 x 5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	2R	Opt	O4IV	471	2-Opt	——	34x7	34x7D
††Mack A B	2½-3	4150	Own	L	6	3 5/8 x 5	309.6	31.5	75@2600	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	471	2-Opt	——	34x7	34x7D
††Mack B C	3-4	5250	Own	L	6	4 x5 1/2	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	2R	Opt	O4IV	610	2-Opt	——	36x8	36x8D
††Mack B C	3½-5	5500	Own	L	6	4 x5 1/2	417.7	38.4	100@2300	G	Own	Own	Spic	Own	Str	Vac	NE	Own	4	Own	Ch	Opt	O4IV	610	2-Opt	——	36x8	36x8D
††Mack B J	3½-5	6150	Own	L	6	4 1/2 x 5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	2R	Opt	O4IV	567	3-Opt	——	36x8	36x8D
††Mack A K	3½-5	5150	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	O4IV	492	3-Opt	——	36x5S	36x5DS
††Mack A K	3½-5	5250	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	2R	Opt	O4IV	492	3-Opt	——	36x5S	36x5DS
††Mack A C	3½-5	4950	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	3-Opt	——	36x5S	40x5DS
††Mack A K	3½-5	6450	Own	L	6	4 1/2 x 5 1/2	525.5	48.6	126@2200	G	Own	Own	Spic	Han	Str	Vac	L-N	Own	4	Own	2R	Opt	O4IV	492	3-Opt	——	22x10.50B	22x10.50DB
††Mack A C	5½-7	5500	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	3-Opt	——	36x6S	40x6DS
††Mack A G	5½-7	6550	Own	L	6	4 1/2 x 5 1/2	525.5	48.6	126@2200	G	Own	Own	Spic	Han	Str	Vac	L-N	Own	4	Own	Ch	Opt	O4IV	492	3-Opt	——	24x10.50B	24x10.50DB
††Mack A C	7½	6000	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	OJXM	194	3-Opt	——	36x7S	40x7DS
††Mack A P	7½	9500	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	O2IV	287	191	——	36x7S	40x8DS
Mack A K 6—6 wheel	——	9500	Own	L	6	4 1/2 x 5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	Ch	Opt	ORIV	574	3-Opt	——	9.75x22B	9.75x22DB
††Mack A C 6 wheel	10	7500	Own	L	4	5 x6	471.2	40.0	77@1800	G	Own	Own	Spic	Own	Str	Gra	RB	Own	4	Own	Ch	Opt	ORIV	574	3-Opt	——	36x6S	40x12S
Mack A C 6—6 wheel	——	8700	Own	L	6	4 1/2 x 5 1/2	525.2	48.6	126@2200	G	Own	Own	Spic	Own	Str	Vac	L-N	Own	4	Own	Ch	Opt	ORIV	574	3-Opt	——	9.75x22B	9.75x22DB
††Mack A P 6 wheel	10	12000	Own	L	6	5 x6	706.5	60.0	150@2000	G	Own	Own	Spic	Own	Str	Gra	NE	Own	4	Own	Ch	Opt	ORIV	574	3-Opt	——	36x7S	40x12S
Paige	½	*895	Own	L	6	3 1/8 x 4 1/2	224	23.4	70@3200	C	Long	Long	Un	Ross	DL	P	DR	—	3	——	Sp	14.2	41H	187	115	——	18x5.50B	18x5.50B
Pierce-Arrow P T	2	2950	Own	L	6	3 3/4 x 4 1/2	298.0	33.5	70@2600	G	Long	Long	Cle	Han	Zen	P	DR	Cla	4	Tim	Sp	——	B4IMV	388	160	5600	20x7.50B	20x7.50B
Pierce-Arrow P W	3	4150	Own	L	6	4 1/8 x 4 1/2	361.0	40.3	77@2400	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	*Wo	——	W4IA	488	150	6660	20x9.00B	20x9.00B
Pierce-Arrow P X	4	5375	Own	L	6	4 5/8 x 4 3/4	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Tim	Wo	——	W4IA	610	160	9300	20x10.50B	20x10.50B
Pierce-Arrow P Y	5	5950	Own	L	6	4 5/8 x 4 3/4	479.0	51.3	103@2200	G	Long	Long	Cle	Han	Zen	P	DR	Cov	4	Own	*Wo	——	W4IA	701	160	10675	24x10.50B	24x10.50B
Pierce-Arrow P Z	8	6950	Own	L	6	4 3/4 x 5 3/4	611.0	54.1	130@2000	G	Long	Long	Cle	Han	Zen	P	DR	Own	4	Own	*Wo	——	W4IA	702	168	12800	36x7B	40x16B
Relay Series 15 AA	¾	1370	Con	L	6	3 3/8 x 4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Str	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3750	30x5P	30x5P
Relay Series 15 AB	1	1400	Con	L	6	3 3/8 x 4	214.7	27.3	52@2200	C	Long	Borg	Blo	Han	Zen	Vac	Aut	W-G	4	Own	2R	38.4	L4IH	297	131	3800	30x5P	30x5P
Relay Series S 11	1	1700	Bud	L	6	3 3/8 x 4 1/2	241.

Major Specifications and Mechanical Details of 1931 Commercial Cars

(CONTINUED FROM PAGE NINE)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	Valve Arr'g'm't	No. of Cyls.	Bore and Stroke	Piston Disp.	Tax H. P.	Max. Brake H. P. and Peak R. P. M.	Type Camshaft Drive	Radiator Make	Clutch Make	Universals Make	Steering Gear Make	Carburetor Make	Fuel Feed Type	Make Electr'l System	Make Transmission	No. Spds. For.	Rear Axle Make	Type Final Drive	Final Gear Reduction	Type Service Brakes	Area Service Brakes	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Selden 67 C	5	4975	Con	H	6	4⅜x4¾	427.0	45.9	100@2400	C	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	L4IHVA	—	171	8700	36x8	36x8D
Selden 77	7	7365	Con	L	6	4¾x5¾	611.0	54.1	127@2300	G	Own	Br-L	Spic	Ross	Str	Vac	Aut	Br-L	7	Wis	2R	——	BW4IM	—	178	11600	40x8	42x9D
Service Series S 11	1	1600	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Col	Sp	25.5	——	—	142	3900	30x5P	30x5P
Service Series S 11	1½	1900	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	163	4300	30x5P	30x5DP
Service Series 40	1½	2990	Bud	L	6	3⅜x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4700	34x5P	34x5DP
Service Series S 11	2	2030	Bud	L	6	3⅜x4½	241.6	27.3	53@2200	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Sp	29.2	L4IH	297	162	4500	32x6	32x6D
Service Series 40	2	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	4900	36x6	36x6D
Service Series 40	2½	3240	Bud	L	6	3⅝x5	309.6	31.5	64@2100	G	Long	Br-L	Blo	Han	Zen	Vac	Aut	Br-L	4	Tim	Wo	34.8	L4IH	394	168	5100	36x6P	36x6D
Service Series 60	2½	4580	Bud	L	6	4⅛x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	L4IH	584	175	7000	36x6	36x6D
Service Series 60	3	4680	Bud	L	6	4⅛x5½	410.9	40.8	83@2100	G	Long	Ful	Blo	Han	Zen	Vac	Aut	Ful	5	Tim	Wo	63.0	——	—	175	7100	36x6	38x7D
Service Series 80	3½	5250	Bud	L	6	4⅛x5½	411.0	40.8	83@2100	G	Long	Borg	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8200	36x6S	36x12S
Service Series 80	4	5330	Bud	L	6	4⅛x5½	411.0	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	98.2	——	—	175	8400	36x6S	36x14S
Service Series 100	5	5830	Bud	L	6	4⅛x5½	410.9	40.8	83@2100	G	Long	Own	Blo	Ross	Zen	Vac	Aut	Br-L	7	Tim	Wo	95.0	——	—	175	9600	36x6S	40x14S
Stewart 30	1	695	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	2977	20x6.50	20x6.50
Stewart 30X	1	795	Lyc	L	6	3 x4¾	185.0	19.8	55@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	3018	20x6.50	20x6.50
Stewart 40	1⅛	895	Lyc	L	4	3¾x4½	199.0	22.5	50@2600	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	—	130	3350	20x6.50	20x6.50D
Stewart 40 X	1½	995	Lyc	L	6	3 x4½	201.5	23.8	60@2800	G	Fed	Borg	Spic	Ross	Str	P	DR	W-G	4	Sal	Sp	35.1	B4IM	—	130	3393	20x6.50	20x6.50D
Stewart 34 X	1½	1195	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Borg	Spic	Ross	Str	P	DR	W-G	4	Cla	Sp	35.1	B4IM	—	145	3710	20x6.50	20x6.50D
Stewart 28X	2	1495	Lyc	L	6	3¼x4½	224.0	25.3	61@2600	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	—	136	4058	20x6.50	20x6.50D
Stewart 29 X S	2	1695	Lyc	L	6	3⅜x4½	278.0	25.3	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	44.1	B4IM	—	145	4960	32x6	32x6D
*Stewart 18 X	2½	2690	Lyc	L	6	3⅞x5½	310.0	31.5	85@2750	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	4	Tim	Wo	48.1	B4IM	—	165	5901	32x6	32x6D
Stewart 32 X	2½	1990	Lyc	L	6	3⅜x4½	278.0	31.5	80@2500	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46.1	B4IM	—	165	5230	32x6	32x6D
Stewart 35 X	3	2590	Lyc	L	6	3¾x4½	299.0	33.8	85@2750	G	Fed	Ful	Spic	Ross	Str	P	DR	Ful	4	Cla	Sp	46.1	B4IM	—	165	5880	20x8.25B	20x8.25D
Stewart 36 X	3	2990	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Fed	—	Spic	Ross	Str	P	DR	Br-L	4	Tim	Wo	105.1	——	—	165	6500	20x8.25	20x8.25D
Stewart 38-8	3½	3990	Lyc	L	8	3¾x4¾	462.0	44.4	130@2800	G	Fed	—	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105.1	——	—	170	7600	20x9.00	20x9.00D
Stewart 38-6	3½	3990	Wak	L	6	4⅜x5½	420.0	45.9	100@2000	G	Fed	—	Spic	Ross	Str	P	DR	Br-L	12	Tim	2R	105.1	——	—	170	7600	20x9.00	20x9.00D
Stewart 19 X	3½	3690	Lyc	L	6	3⅞x5	354.0	36.2	90@2750	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	12	Tim	Wo	105.1	B4IM	—	165	7110	34x7	34x7D
Stewart 31 X	5	4990	Wak	L	6	4⅜x5½	462.0	45.9	100@2000	G	Mod	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	9340	36x6S	36x6SD
Stewart 27 X	7	5700	Wak	L	6	4⅜x5½	462.0	45.9	100@2000	G	Own	Ful	Spic	Ross	Str	P	DR	Ful	8	Tim	Wo	105.1	B4IMV	—	165	9987	36x7	40x7D
Studebaker S-1	½	595	Own	L	6	3⅜x4½	221.0	27.3	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	3	Own	Sp	16.4	B4IM	148	114	2330	19x5.25	19x5.25
Studebaker S-20	1½	695	Own	L	6	3¼x4½	205.0	25.4	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	130	2985	20x6.00	32x6
Studebaker S-30	1½	775	Own	L	6	3¼x4½	205.0	25.4	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	36.2	B4IM	224	160	3140	20x6.00	32x6
Studebaker S-40	2	945	Own	L	6	3¼x4½	205.0	25.4	70@3200	C	McC	Long	Spic	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	136	3775	20x6.50	20x6.50D
Studebaker S-50	2	895	Own	L	6	3¼x4½	205.0	25.4	70@3200	C	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	148	3810	20x6.50	20x6.50D
Studebaker S-60	2	945	Own	L	6	3¼x4½	205.0	25.4	70@3200	C	McC	Long	Cle	Ross	Str	P	DR	W-G	4	Tim	Sp	37.4	B4IM	276	146	3285	20x6.50	20x6.50D
Studebaker GN-N	——	1245	Own	L	6	3⅜x4½	221.0	27.3	70@3200	C	—	Long	—	Ross	Str	P	DR	Cla	4	Cla	Sp	33.5	B4IM	348	160	3850	30x5	32x6
Studebaker 88	——	3295	Own	L	8	3½x4⅜	337.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	444	184	5200	20x7.50	20x7.50D
Studebaker 90	——	3795	Own	L	8	3½x4⅜	337.0	39.2	115@3200	G	Long	Long	Spic	Ross	Str	P	DR	Ful	4	Eat	Sp	24.6	B4IMV	505	184	5680	20x7.50	20x7.50D
White 15B	*7,500	1545	Own	L	4	3¾x5½	226.4	22.5	31@1600	G	Own	Own	Spic	Own	Zen	Vac	L-N	Own	4	Own	Sp	18.6	O2XM	226	133½	3402	30x5	30x5
White 160	*8,000	1700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4025	30x5	30x5
White 60	*8,000	1850	Own	L	6	3½x4½	260.0	29.4	54@2100	C	Own	Own	Mec	Han	Zen	Vac	DR	Own	3	Own	Sp	17.8	L4IH	276	138	3739	30x5	30x5D
White 161	*9,000	1850	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4290	34x7	34x7
White 162	*10,000	1900	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Mec	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4260	30x5	30x5D
White 210	*10,000	2300	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4875	30x5	30x5D
White 61	*10,500	2450	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	Own	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4789	30x5	30x5D
White 611	*11,500	2550	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	—	Own	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	4980	20x7.00B	20x7.00DB
White 211	*11,500	2425	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5110	32x6	32x6D
White 212	*13,000	2700	Own	L	4	4 x5¾	289.0	25.6	45@1800	G	—	Own	Spic	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5230	34x7	34x7D
White 56	*13,000	3125	Own	L	4	4 x5¾	289.0	25.6	45@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	26.2	O2IM	268	165	5276	36x4	36x7
White 612	*13,000	2800	Own	L	6	3¾x4½	299.0	33.7	61@2100	C	—	Own	—	Han	Zen	Vac	DR	Own	4	Own	Sp	23.4	L4IH	349	148	5100	20x7.50B	20x7.50DB
White 620	*15,000	4350	Own	H	6	4 x5¼	396.0	38.4	72@1800	G	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.8	OL4IHV	—	157	7300	20x8.25B	20x8.25DB
White 51A	*17,000	3750	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	35.6	O2IM	335	170	6438	36x5	36x8
White 51AT	*17,000	3875	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	Sp	46.6	O2IM	335	134	6227	36x5	36x8
White 621	*18,000	4650	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	OL4IHV	—	157	7700	20x9.00B	20x9.00DB
White 640	*20,000	6100	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	Sp	33.9	O4IA	—	180	9200	20x9.00B	20x9.00DB
White 630	*20,000	5000	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	—	Own	Spic	Ross	Zen	P	DR	Own	4	Own	Sp	41.4	O4IHV	554	168	8500	20x9.00B	20x9.00DB
White 55	*21,500	4650	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	66.1	OPXM	224	174	8737	36x5	40x5D
White 58	*22,000	4400	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	49.7	OPXM	224	180	7797	36x5	36x5D
White 641	*24,000	6450	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	46.9	O4IA	—	180	9700	20x9.75B	20x9.75DB
*White 630 SW200	*24,000	6280	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Ross	Zen	P	DR	Own	4	TIM	WO	44.2	OTIHV	—	193	10000	20x8.25B	20x8.25DB
White 631	*24,000	5750	Own	H	6	4 x5¼	396.0	38.4	72@1800	C	Own	Own	Spic	Own	Zen	P	DR	Own	4	Own	2R	56.9	O4IHV	—	168	9000	30x9.25B	20x9.25DB
White 52	*28,000	5100	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	58.4	OPXM	224	174	9409	36x5	40x12
White 52T	*28,000	4700	Own	L	4	4¼x5¾	326.0	28.9	54@1600	G	Own	Own	Spic	Own	Zen	Vac	Eis	Own	4	Own	2R	76.5	OPXM	224	129½	8461	36x5	40x5D
White 643	*32,000	6950	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10900	24x10.50B	24x10.50DB
*White 642 SW310	*34,000	8045	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	TIM	WO	55.6	OTIHV	—	198	12670	20x9.00B	20x9.00DB
White 642	*34,000	6750	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	Own	Own	Spic	Ross	Zen	P	L-N	Own	4	Own	2R	66.5	O4IA	—	180	10600	24x9.75B	24x9.75DB
*White 613 SW110	*40,000	8570	Own	H	6	4⅜x5¾	519.0	45.9	96@1800	C	—	Own	Spic	Ross	Zen	P	L-N	Own	4	TIM	WO	69.9	OTIHV	—	198	14400	40x8	40x8D
**White 60K	——	2200	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	Own	MEC	Han	Zen	Vac	DR	Own	3	Own	Sp	17.6	L4IH	276	112	5200	20x7.00B	20x7.00B
White 601	——	1900	Own	L	6	3½x4½	260.0	29.4	54@2100	C	—	Own	MEC	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	3825	20x7.00B	20x7.00B
White 602	——	2050	Own	L	6	3½x4½	260.0	29.4	50@1800	C	—	Own	MEC	Han	Zen	Vac	DR	Own	4	Own	Sp	19.5	L4IH	276	138	4125	20x7.50B	20x7.50B
Willys 6-C-113	½	395	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	Own	3	Own	Sp	12.4	B4IM	147	113	1872	19x5.00	19x5.00
Willys 6-C-131	1⅛	595	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	232	131	2625	20x5.50	32x6
Willys 6 C-157	1⅛	630	Own	L	6	3¼x3⅞	193.0	25.3	65@3400	C	Fed	Borg	Spic	Own	Til	P	Aut	W-G	4	Cla	Sp	40.8	B4IM	232	157	2960	20x5.50	32x6

GENERAL NOTATIONS

***†REFERENCE MARKS** apply to individual lines only and explanations are given under the subdivision for each company in the "**SPECIAL NOTATIONS.**"

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Lyc, Lycoming; Pont, Pontiac; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

VALVE ARRANGEMENT—L, "L" head; H, in head; O, overhead; T, T head.

TYPE OF CAMSHAFT DRIVE—G, gear; C, chain.

RADIATOR MAKE—G & O, G & O Mfg. Co.; Per, Perfex Corp.; Long, Long Mfg. Co.; Har, Harrison Radiator Corp.; Fed, Fedders Mfg. Co.; McC, McCord Radiator & Mfg. Co.; Mod, Modine Mfg. Co.; Hex, Hexcel Radiator Co.

CLUTCH MAKE—Jon, Jones Clutch & Gear Co.; Ful, Fuller & Sons Mfg. Co.; Borg, Borg & Beck Co.; Br-L, Brown Lipe Gear Co.; Rock, Rockford Drill & Machine Co.; Cov, Covert Gear Co.; Long, Long Mfg. Co.; Detr, Detroit Gear & Machine Co.; Mer, Merchant & Evans; Hel, Merchants & Evans.

UNIVERSALS MAKE—Spic, Spicer Mfg. Co.; Bio, Blood Bros. Machine Co.; Sup, Superior Universal Products; Un, Universal Products Co.; Cle, Cleveland Steel Products Corp.; Pet, Peters; Opt, optional; Mec, Mechanics Machine Co.

STEERING GEAR MAKE—Ross, Ross Gear & Tool Co.; Han, Hannum Mfg. Co.; Sag, Saginaw Steering Gear Co.; Gem, Gemmer Mfg. Co.; Col, Columbus Gear & Pump Co.; W-G, Warner Gear Corp.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, gravity; Vac, vacuum tank; P, fuel pump.

ELECTRICAL SYSTEM—AB, American-Bosch; Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; NE, North East; RB, Robert Bosch; DR, Delco-Remy.

TRANSMISSION—Br-L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cot, Cotta Gear Co.; Cla, Clark Equipment Co.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Pont, Pontiac; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, internal gear; St, straight bevel; Sp, spiral bevel; Wo, worm; 2R, double reduction; Ch, chain; S-T, semi-transverse.

TIRES—B, balloon; D, dual; S, solid; P, pneumatic.

TYPE OF SERVICE BRAKES—

B4IM, Bendix, 4 wheel internal mechanical; **B6IA**, Bendix, 6 wheel, internal air; **B4IMV**, Bendix, 4 wheel, internal mechanical, vacuum; **BrIA**, Bendix operating on 4 rear wheels, internal, air; **BW4IM**, Bendix front, Wisconsin rear, 4 wheel internal, mechanical; **BE4IM**, Bendix front, Eaton rear, 4 wheel, internal mechanical; **BO4IM**, Bendix front, own rear, 4 wheel internal mechanical; **B4IH**, Bendix, 4 wheel, internal, hydraulic; **B4**, Bendix, 4 wheel.

C4IM, Columbia, 4 wheel, internal, mechanical; **K2IM**, Clark, 2 wheel, internal, mechanical.

L4IHVA, Lockheed, 4 wheel, internal, hydraulic, vacuum, air; **LO4ID**, Lockheed, own, 4 wheel, internal, drive shaft; **LT4DV**, Lockheed Timken, 4 wheel, drive shaft, vacuum; **L4IH**, Lockheed, 4 wheel, internal, hydraulic; **L4IHV**, Lockheed, 4 wheel, internal, hydraulic, vacuum; **LT4IVA**, Lockheed, Timken, 4 wheel, internal, vacuum, air; **L6IHV**, Lockheed, 6 wheel, internal, hydraulic, vacuum; **L6IH**, Lockheed, 6 wheel, internal, hydraulic.

O2IM, Own, 2 wheel, internal, mechanical; **O2IV**, Own, 2 wheel, internal, vacuum; **O4IA**, Own, 4 wheel, internal, air; **O4IM**, Own, 4 wheel, internal, mechanical; **O4IV**, Own 4 wheel, internal, vacuum; **O4M**, Own, 4 wheel, mechanical; **O2XM**, Own, 2 wheel, external, mechanical; **O4XM**, Own, 4 wheel, external, mechanical; **OJXM**, Own, jack shaft, external, mechanical; **OL4IH**, Own, Lockheed, 4 wheel, internal, hydraulic; **OPX**, Own, propeller shaft, external; **OPXM**, Own, propeller shaft, external, mechanical; **OPM**, Own, propeller shaft, mechanical; **ORIV**, Own, rear wheels, internal, vacuum.

S4IM Steeldraulic, 4 wheel, internal, mechanical.

T4rIA, Timken, operating on 4 rear wheels, internal, air; **T4IA**, Timken, 4 whcel, internal, air; **T6IA**, Timken, 6 wheel, internal, air; **T2IMV**, Timken, 2 wheel internal, mechanical, vacuum.

W4I, Westinghouse, 4 wheel, internal; **W4IA**, Westinghouse, 4 wheel, internal, air. **4IA**, Four wheel, internal, air; **4IH**, Four wheel, internal, hydraulic.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $3,900.

Chieftain model also available as Dump Truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six wheelers.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DAY ELDER

*Six wheeler.

Additional standard wheel bases are available on different models as follows:—

85	156, 168	240	204
110	168, 186	285	204
130	165, 180, 204	345	204
160	165, 180, 204	402	204

DODGE

*Models F40, F41, F61 and F62 can be had with double drop frame.

DIAMOND T

*Six wheelers.

Additional standard wheel bases available as follows:—

551	158	750	167, 192
504	166½	801	180½, 199¼
506	174	1200	174½, 180
603	157, 179	1600	174½, 180
606	177½	1601	184

F. W. D.

*Indicates six-wheel model.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

FEDERAL

*Six wheelers.

GRAMM

Series	Straight Rating	Wheel Base	Pay Load Range
AX 4	3,000	157	1 to 1½ tons
AX 6	3,000	157	1 to 1½ tons
BX 4	10,000	157	1½ to 2 tons
BX 6	10,000	157	1½ to 2 tons
CX 4	12,000	157-180	2 to 3 tons
CX 6	12,000	157-180	2 to 3 tons
B	12,000	157-174	1¾ to 2½ tons
O	14,000	145-196	2 to 3 tons
D	17,000	145-196	2½ to 4 tons
E	20,000	145-196	3 to 4½ tons
EY			3 to 4 tons
GY			4 to 5 tons
GW	28,000	157-240	5 to 7½ tons
HY			5 to 6½ tons

†Both the four and six cylinder are also offered in 157-inch wheel base at $1,145 and $1,345, respectively.

GENERAL MOTORS TRUCK

*Capacity indicated is the Straight Rating (combined weight of chassis, body, equipment and payload) for which each chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment based on tire capacity. Prices cover base chassis and vary with wheel base and tire combinations. The number of wheel base lengths, tire types, range of "recommended gross weights" and resulting payload range (assuming nominal body allowance) for each model follows:—

Note: Models T-15 to T-60, inclusive, are available for export only as coach chassis.

Model	Wheel Bases	Tire Types	Range of "Rec. Gross Weights"	Payload Range
T-11	1	1	3800	½
T-15	3	10	4500- 6500	½-1½
T-17	2	8	5500- 6500	1-1½
T-19	3	22	6500- 8500	1½-2
T-25	3	17	6800- 9000	1½-2
T-26	4	..	8500-11000	2-3
T-30	3	15	10000-12500	2-3
T-31	4	..	11000-14000	2½-4
T-42	4	12	12000-15000	2½-4
T-44	4	12	12000-16000	3-4½
T-51	4	..	16500-19000	4-5½
T-55	4	..	16500-19000	4-5½
T-60	4	18	18500-22000	5-6½
T-61	4	..	19500-22000	6-6½
T-82	4	12	19000-24000	5-7
T-85	3	..	22000-26000	5-7
T-90	3	7	22000-28000	5-7½
T-95	3	..	28000-34000	7-9
T-96	3	..	28000-34000	7-9

†Models T-90, T-95 and T-96 are six wheelers, the latter having one driven and one trailing axle. Optional rear axle gear ratios available for all models.

Double reduction axles available for Models T-60, T-61 and T-82.

INDIANA

*Six wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains, foot brake on 4 rear wheels.

††Made also in tractor models.

PAIGE

*Price includes panel or screen body.

PIERCE-ARROW

*Optional final drive on Models PW, PX, PY and PZ.

REO

Model 15 Junior can be had with 4-speed transmission at additional cost. Models 15 Junior, DF 129, DF, FA, FE and FF are available with dual wheels at additional cost.

SELDEN

Additional standard wheel bases are available on different models as follows:—

Model 37C	162 and 181
39C	177 and 190½
47CB, 47CD	151, 164 and 184
97C	151, 164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120 and 140-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Model 34X can be supplied in 135, 148, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base.

*Models 18X, 32X and 36X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment models 18X, 19X, 36X, 31X and 27X can be supplied with Timken dual reduction rear axle.

Models 38-8 and 38-6 can be supplied in 196, 226 and 241-inch wheel base and worm axle.

STUDEBAKER

*Capacity model GN-N is 4,000 pounds for body, cab, driver and payload.

Maximum gross load, chassis, body and payload for Models 77 and 88 is 12,500 lbs. and for Model 99 is 14,000 lbs.

†Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

WHITE

*Six wheelers.

**Price on Model 60K includes body.

14 CAR MAKERS TESTING L. G. S. FREE WHEELING

Indianapolis, Ind., May 21.—Fourteen automobile companies now have L. G. S. Free Wheeling units in experimental cars on their proving grounds, W. C. Starkey, president of the L. G. S. Devices Corporation, announced today. The L. G. S. Company is a division of the Cord Corporation.

Starkey also announced that two automobile companies had already entered contracts for the use

WEEKLY BUSINESS INDICATORS

SURVEY OF CURRENT BUSINESS

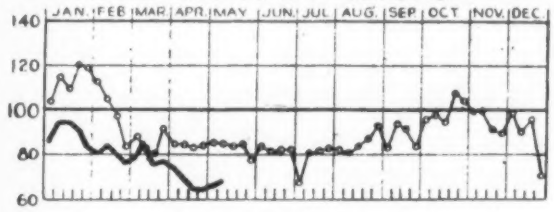
UNITED STATES DEPARTMENT OF COMMERCE

DATA PLOTTED, WHERE AVAILABLE FOR WEEK ENDING MAY 16, 1931

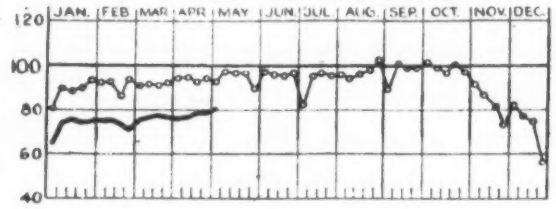
WEEKLY AVERAGE, 1923-1925, INCLUSIVE=100

LEGEND
1930
1931

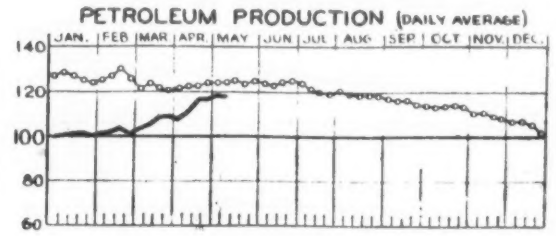
BITUMINOUS COAL PRODUCTION



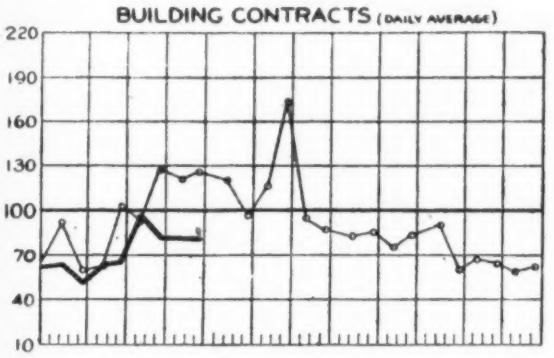
FREIGHT CAR LOADINGS



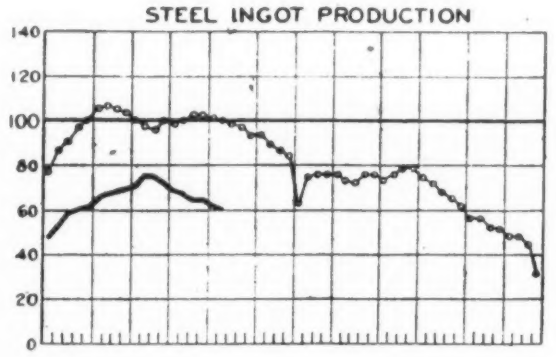
PETROLEUM PRODUCTION (DAILY AVERAGE)



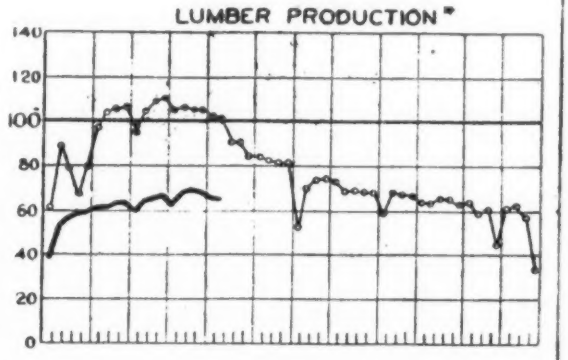
BUILDING CONTRACTS (DAILY AVERAGE)



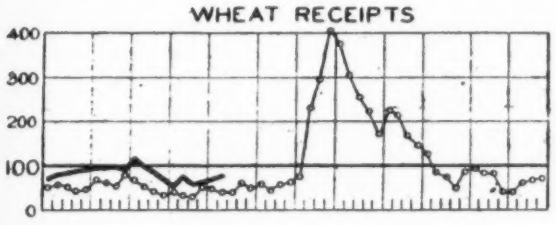
STEEL INGOT PRODUCTION



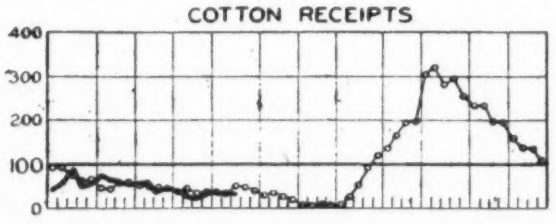
LUMBER PRODUCTION*



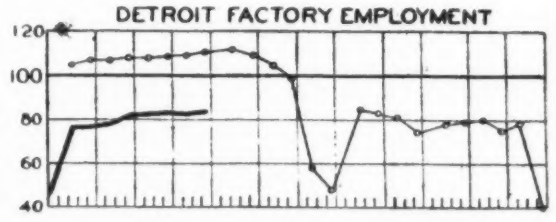
WHEAT RECEIPTS



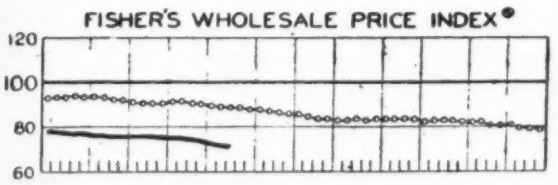
COTTON RECEIPTS



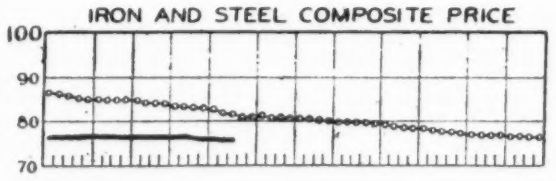
DETROIT FACTORY EMPLOYMENT



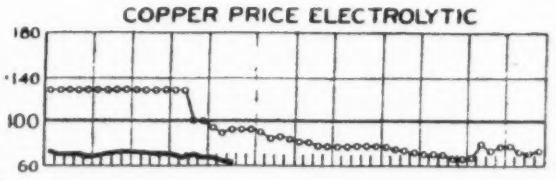
FISHER'S WHOLESALE PRICE INDEX*



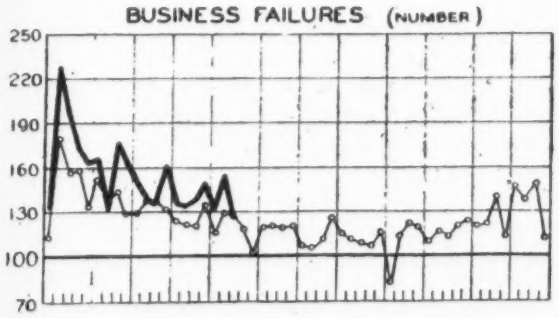
IRON AND STEEL COMPOSITE PRICE



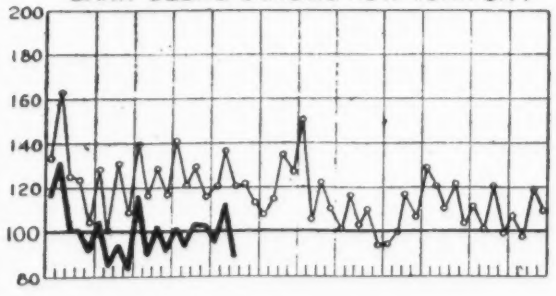
COPPER PRICE ELECTROLYTIC



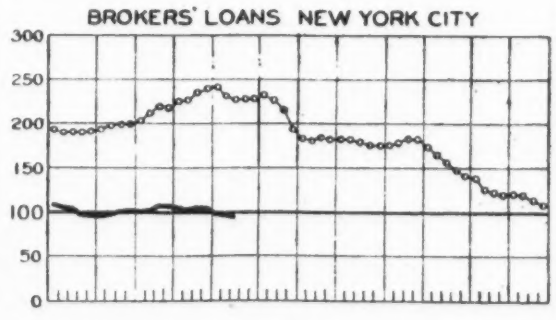
BUSINESS FAILURES (NUMBER)



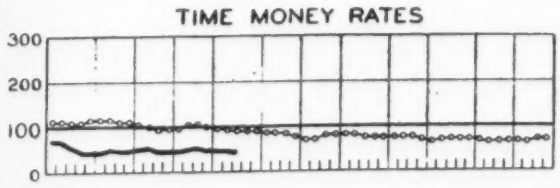
BANK DEBITS OUTSIDE NEW YORK CITY



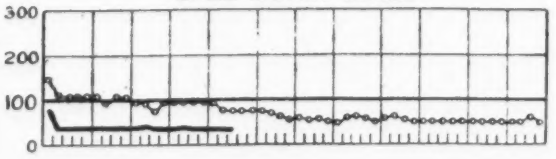
BROKERS' LOANS NEW YORK CITY



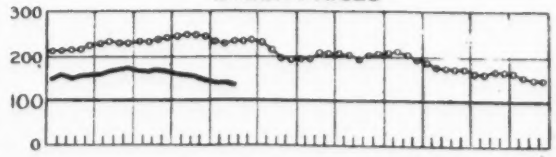
TIME MONEY RATES



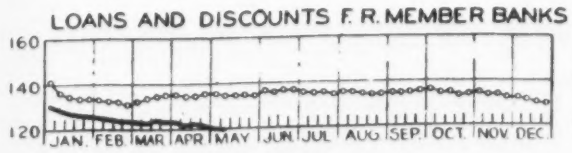
CALL MONEY RATES



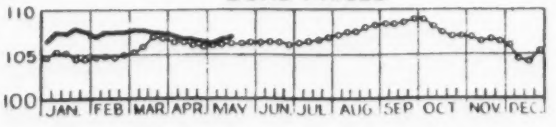
STOCK PRICES



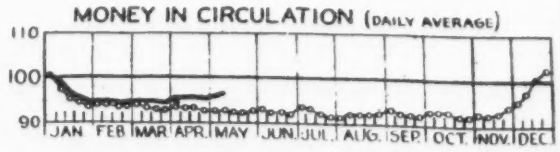
LOANS AND DISCOUNTS F. R. MEMBER BANKS



BOND PRICES



MONEY IN CIRCULATION (DAILY AVERAGE)



* RELATION TO WEEKLY AVERAGES 1928-1930 PER WEEK SHOWN. ⊛ RELATIVE TO 1926=100

B. & D. INTRODUCING FENDER STRAIGHTENER

Towson, Md., May 21.—L. L. Charmicky of the research and experimental laboratories of the Black & Decker Manufacturing Company is on a swing around the Pacific Coast states to introduce to the automotive trade the new Black & Decker electric fender straightener.

The electric fender straightener is a portable tool.

SHORT LINES ADDS 6 BUSES IN NEW JERSEY

New Brunswick, N. J., May 21.—Cities on the New York-Washington Highway, including New Brunswick, will obtain augmented transportation service through the addition of six new passenger buses placed in service this week by the Short Lines, inter-city bus system, according to an announcement by William H. Vanderbilt, president.

The motor coaches each carry thirty-three passengers and are of the observation-car type, equipped with special seating arrangements. Every safety device has been incorporated, including airbrakes and safety shatterproof glass. The coaches are part of an order for twenty-two such buses, to a total cost of more than $250,000, which have just been added to the Short Lines fleets in the Central Atlantic and New England states.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

A MESSAGE TO AUTOMOBILE DEALERS

Don't Be Left Behind!

Remember how self starters and four-wheel brakes obsoleted cars that did not have them?

Now, it is going to be even harder to sell a car that does not have Free Wheeling. The public wants it and is going to have it.

Many people think the main advantages of Free Wheeling are the savings of fuel and the absence of strains on the car when coasting on momentum.

The *main* reason Free Wheeling has come to stay is the fact that the driver can *shift gears easily, and quickly,* without using the clutch. Women especially appreciate this convenience IN TRAFFIC.

Abundant proof that L. G. S. Free Wheeling helps to sell automobiles is found in the sales increase of Auburn cars. Auburn has sold 7169 more cars in the first 4½ months of this year than in the entire year of 1930.

One of the EXCLUSIVE improvements in Auburn's L. G. S. Free Wheeling is the lockout lever. It lets you drive completely in Free Wheeling or completely in positive gear; no need to continually change back and forth between the two.

L. G. S. offers many exclusive advantages: smoother action: no oil troubles: not affected by temperature: fewer parts: greater simplicity and durability.

No doubt the builders of the car you handle are now investigating L. G. S. Why don't you make sure you get it. Write your manufacturers. We will be glad to send you complete information upon request.

L. G. S. DEVICES CORP., Indianapolis, Indiana

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